

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

ULTRAVISION TECHNOLOGIES, LLC,	§ § § § §	
<i>Plaintiff,</i>		
v.	§	Case No. 2:18-CV-00100-JRG-RSP
GOVISION LLC,	§	LEAD CASE
<i>Defendant.</i>	§ § §	

CLAIM CONSTRUCTION MEMORANDUM AND ORDER

On July 29, 2020, the Court held a hearing to determine the proper construction of the disputed claim terms within in United States Patent Nos. 9,047,791 (“the ’791 Patent”); 9,207,904 (“the ’904 Patent”); 9,642,272 (“the ’272 Patent”); 9,666,105 (“the ’105 Patent”); 9,916,782 (“the ’782 Patent”); 9,978,294 (“the ’294 Patent”); 9,984,603 (“the ’603 Patent”); 9,990,869 (“the ’869 Patent”); and 10,248,372 (“the ’372 Patent”) (collectively, “the Asserted Patents”). Having reviewed the arguments made by the parties at the hearing and in their claim construction briefing (Dkt. Nos. 297, 304 & 307), having considered the intrinsic evidence, and having made subsidiary factual findings about the extrinsic evidence, the Court hereby issues this Claim Construction Memorandum and Order. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); *see also Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

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I. BACKGROUND

Plaintiff Ultravision Technologies, LLC (“Plaintiff” or “Ultravision”) alleges that Defendants Shenzhen Absen Optoelectronic Co., Ltd., Absen, Inc., Yaham Optoelectronics Co., Ltd., Barco NV, Prismaflex International France S.A., Ledman Optoelectronic Co., Ltd., and Samsung Electronics Co., Ltd. (collectively “Defendants”) infringe the Asserted Patents. Shortly before the start of the July 29, 2020 hearing, the Court provided the parties with preliminary constructions with the aim of focusing the parties’ arguments and facilitating discussion.

II. APPLICABLE LAW

A. Claim Construction

This Court’s claim construction analysis is guided by the Federal Circuit’s decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the Federal Circuit reiterated that “the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Id.* at 1312. The starting point in construing such claims is their ordinary and customary meaning, which “is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1312-13.

However, *Phillips* made clear that “the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* at 1313. For this reason, the specification is often ‘the single best guide to the meaning of a disputed term.’” *Id.* at 1315 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979–81 (Fed.Cir.1995) (en banc), aff’d, 517 U.S. 370 (1996)) (internal quotation marks omitted). However, it is the claims, not the specification, which set forth the limits of the patentee’s invention. *Id.* at 1312. Thus, “it is improper to read limitations from a preferred embodiment described in the specification—even if

it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). Other asserted or unasserted claims can also aid in determining a claim’s meaning. *See, e.g., Phillips*, 415 F.3d at 1314 (explaining that use of “steel baffles” and “baffles” implied that “baffles” did not inherently refer to objects made of steel).

The prosecution history also plays an important role in claim interpretation as intrinsic evidence of how the U.S. Patent and Trademark Office (“PTO”) and the inventor understood the patent. *Id.* at 1317, *see also Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that “a patentee’s statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation”); *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1361 (Fed. Cir. 2017) (applying this principle in the context of *inter partes* review proceedings). However, “because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.* at 1318, *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (noting that ambiguous prosecution history may be “unhelpful as an interpretive resource”).

Additionally, courts may rely on extrinsic evidence such as “expert and inventor testimony, dictionaries, and learned treatises.” *Id.* at 1317. As the Supreme Court explained:

In some cases . . . the district court will need to look beyond the patent’s intrinsic evidence . . . to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015). However, the Federal Circuit has emphasized that such extrinsic evidence is subordinate to intrinsic evidence. *Phillips*, 415 F.3d at 1317 (“[W]hile extrinsic evidence can shed useful light on the relevant art, we have explained

that it is less significant than the intrinsic record in determining the legally operative meaning of claim language.”) (internal quotation marks omitted).

B. Departing from the Ordinary Meaning of a Claim Term

There are “only two exceptions to [the] general rule” that claim terms are construed according to their plain and ordinary meaning: “1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.”¹ *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (“[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal.”). The standards for finding lexicography or disavowal are “exacting.” *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must “clearly set forth a definition of the disputed claim term,” and “clearly express an intent to define the term.” *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee’s lexicography must appear “with reasonable clarity, deliberateness, and precision.” *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee’s statements in the specification or prosecution history must amount to a “clear and unmistakable” surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 (“The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction,

¹ Some cases have characterized other principles of claim construction as “exceptions” to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

representing a clear disavowal of claim scope.”) “Where an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013); *see also Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016) (“When the prosecution history is used solely to support a conclusion of patentee disclaimer, the standard for justifying the conclusion is a high one.”).

Although a statement of lexicography or disavowal must be exacting and clear, it need not be “explicit.” *See Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1364 (Fed. Cir. 2016) (“a patent applicant need not expressly state ‘my invention does not include X’ to indicate his exclusion of X from the scope of his patent”). Lexicography or disavowal can be implied where, e.g., the patentee makes clear statements characterizing the scope and purpose of the invention. *See On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1340 (Fed. Cir. 2006) (“[W]hen the scope of the invention is clearly stated in the specification, and is described as the advantage and distinction of the invention, it is not necessary to disavow explicitly a different scope.”). Nonetheless, the plain meaning governs “[a]bsent implied or explicit lexicography or disavowal.” *Trs. of Columbia Univ.*, 811 F.3d at 1364 n.2.

C. Definiteness Under 35 U.S.C. § 112(b)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112(b). A claim, when viewed in light of the intrinsic evidence, must “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). If it does not, the claim fails § 112(b) and is therefore invalid as indefinite. *Id.* at 2124. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to

comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. “[I]ndefiniteness is a question of law and in effect part of claim construction.” *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, “the court must determine whether the patent provides some standard for measuring that degree.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, “the court must determine whether the patent’s specification supplies some standard for measuring the scope of the [term].” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

D. 35 U.S.C. § 112(f)

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112 (f); *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112(f) provides that a structure may be claimed as a “means . . . for performing a specified function” and that an act may be claimed as a “step for performing a specified function.” *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But § 112(f) does not apply to all functional claim language. There is a rebuttable presumption that § 112(f) applies when the claim language includes “means” or “step for” terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112(f) does not apply when “the claim language, read in light of the specification, recites

sufficiently definite structure” (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014)); *Williamson*, 792 F.3d at 1349 (§ 112(f) does not apply when “the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure”); *Masco Corp.*, 303 F.3d at 1326 (§ 112(f) does not apply when the claim includes an “act” corresponding to “how the function is performed”); *Personalized Media Communications, L.L.C. v. International Trade Commission*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112(f) does not apply when the claim includes “sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term ‘means.’”) (quotation marks and citation omitted).

When it applies, § 112(f) limits the scope of the functional term “to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof.” *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. “The first step . . . is a determination of the function of the means-plus-function limitation.” *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). “[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof.” *Id.* A “structure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Id.* The focus of the “corresponding structure” inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is “clearly linked or associated with the [recited] function.” *Id.* The corresponding structure “must include all structure that actually performs the recited function.” *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112(f) does not permit “incorporation of structure from the written

description beyond that necessary to perform the claimed function.” *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112(f) limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

III. THE PARTIES’ STIPULATED TERMS

The parties agreed to the constructions of the following terms/phrases in their July 15, 2020 P.R. 4-5(d) Joint Claim Construction Chart.

Claim Term/Phrase	Agreed Construction
“power supply” ’782: 1, 10, 11, 13 ’869: 19 ’294: 22, 26, 27 ’372: 8 ’603: 1, 4, 5, 6 ’272: 1, 10	“device for receiving external power, modifying that power, and supplying the modified power”
“bay[s]” ’791: 12, 13, 15, 16, 18	“a defined structure to receive one display module” (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)
“preformed wiring harness” ’105: 15	“wiring connector that is assembled prior to installation” (Absen, Prismaflex, Yaham, and Ledman Defendants)

Claim Term/Phrase	Agreed Construction
“louvers(s)” ’782: 5 ’294: 22 ’869: 19 ’603: 1	“slats that protrude farther than each LED or LED module”
“pitch” ’372: 1	“the distance between any two pixels in the panel” (Absen, Prismaflex, and Ledman Defendants)
“the display panel surface” ’272: 1	“the front side of the panel” (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)
“vertical bar extending from the top bar to the bottom bar” ’272: 8, 17	“a bar extending along a direction substantially perpendicular to the top and bottom” (Ledman and Samsung Defendants)
“wherein the mechanical support structure is configured to provide mechanical support to the plurality of display panels without providing waterproof sealing” ’272: 1, 10	“mechanical support structure is designed to mechanically support the plurality of display panels and the mechanical support structure does not have sealing to prevent water from entering the panels” (Ledman and Samsung Defendants)
“casing contacts the opposite second side of the printed circuit board” ’603: 1	“casing physically touches the opposite second side of the printed circuit board” (Ledman, Barco and Samsung Defendants)
“display driver” ’272: 1, 10	“LED driver circuit” (Ledman and Samsung Defendants)
“driver circuit” ’782: 1 ’603: 1 ’372: 1, 10	“LED driver circuit” (Ledman and Samsung Defendants)

Claim Term/Phrase	Agreed Construction
<p>“circuit for controlling the plurality of LEDs” ’294: 1, 13, 22, 30 ’869: 1, 14, 19</p>	<p>“LED driver circuit” (Ledman, Barco and Samsung Defendants)</p>
<p>“second thermally conductive material disposed between the power supply unit and an outer back side of the panel” ’782: 1</p>	<p>“a thermally conductive material (as construed) located between the power supply unit (as construed) and the outer back surface of the panel” (Ledman, Barco and Samsung Defendants)</p>
<p>“a framework of louvers” ’294: 1, 22 ’869: 1, 16, 21</p>	<p>“a framework of slats that protrude farther than each LED or LED module” (Ledman, Barco and Samsung Defendants)</p>
<p>“interlocking features” ’869: 10</p>	<p>“features that engage with one another by overlapping or by the fitting together of projections and recesses” (Ledman, Barco and Samsung Defendants)</p>
<p>“a plurality of sign section assemblies are required to fully form the electronic sign” ’791: 21</p>	<p>“the electronic sign requires a plurality of sign section assemblies in order to be fully formed” (Ledman and Samsung Defendants)</p>

(Dkt. No. 313-1 at 1-5).² In view of the parties’ agreement on the proper construction of the identified terms, the Court hereby **ADOPTS** the parties’ agreed constructions.

Before the claim construction hearing, the parties agreed to the construction of the following terms:

² Citations to the parties’ filings are to the filing’s number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

Claim Term/Phrase	Agreed Construction
“connections for attaching” ’869: 13	Plain and ordinary meaning. (Dkt. No. 304 at 26 n.7; Dkt. No. 313-1 at 9)
“receiving a signal from an adjacent panel indicating the defect” ’904: 1	Plain and ordinary meaning. (Dkt. No. 304 at 27 n.8, Dkt. No. 313-1 at 9)
“wherein the modular display panel is configured to be cooled passively without fans” ’294: 22	Plain and ordinary meaning. (Dkt. No. 304 at 32; Dkt. No. 313-1 at 10)
“wherein the multipanel display system ... is cooled passively and includes no air conditioning, fans, or heating units” ’272: 4, 13	Plain and ordinary meaning. (Dkt. No. 304 at 32; Dkt. No. 313-1 at 10) (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)
“wherein the modular multi-panel display system is cooled passively and includes no air conditioning, fans, or heating units” ’869: 14	Plain and ordinary meaning. (Dkt. No. 304 at 32; Dkt. No. 313-1 at 11)

In view of the parties' agreement on the proper construction of the identified terms, the Court hereby **ADOPTS** the parties' agreed constructions.

IV. CONSTRUCTION OF DISPUTED TERMS IN THE HALL PATENTS

The ’904, ’272, ’782, ’294, ’603, ’869, and ’372 Patents (collectively, the “Hall Patents”) list William Y. Hall as the inventor. Plaintiff contends that the Hall Patents provide “modular multi-panel display[s],” which can be used for “[l]arge displays (e.g., billboards), such as those commonly used for advertising in cities and along roads.” Dkt. No. 297 at 8 (citing ’782 Patent at 1:25–27, 1:31–34). Plaintiff further states that one of the goals of the Hall Patents was to develop

“display panels, each of which provides a completely self-contained building block that is lightweight” and “protect[s] against weather, without a heavy cabinet.” *Id.* at 9 (citing ’782 Patent at 4:53–56). The Abstract of the ’782 Patent states:

Embodiments of the present invention relate to integrated modular display panels. In one embodiment, modular display panel includes a shell with a first thermally conductive material, a printed circuit board disposed in the shell, and a plurality of LEDs attached to a first side of the printed circuit board. A driver circuit is disposed in the shell and coupled to the plurality of LEDs from a second side of the printed circuit board. The panel further includes a power supply unit for powering the LEDs. The printed circuit board are disposed between the power supply unit and the plurality of LEDs. A second thermally conductive material is disposed between the power supply unit and an outer back side of the panel. A protective structure is disposed over the first side of the printed circuit board, where a display side of the panel, opposite the outer back side, is waterproof.

Claim 1 of the ’782 Patent is an illustrative claim and recites the following elements (disputed terms in italics):

1. A *modular display panel* comprising:
 a *shell* comprising a first *thermally conductive* material, wherein
 sidewalls of the *shell* comprise *plastic*;
 a printed circuit board disposed in the *shell*;
 a plurality of LEDs attached to a first side of the printed circuit board;
 a driver circuit disposed in the *shell* and coupled to the plurality of LEDs from a second side of the printed circuit board;
 a power supply unit for powering the LEDs, the printed circuit board being disposed between the power supply unit and the plurality of LEDs;
 a second *thermally conductive* material disposed between the power supply unit and an outer back side of the panel; and
 a protective structure disposed over the first side of the printed circuit board, wherein the *modular display panel* is *sealed to be waterproof*.

A. Modular Display Panel Terms

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“display panel[s]” / “modular display panel[s]” / “LED display panel[s]” / “panel[s]”	“interchangeable display panel for a multi-panel modular display” *term is limiting where it appears in preamble of claims	“a singular interchangeable, self-contained display panel for multi-panel display system” *term is limiting where it appears in preamble of claims

1. The Parties' Positions

The parties agree that the Modular Display Panel terms are limiting when they appear in the preamble of the claims. The parties also agree that the Modular Display Panel terms are interchangeable display panels for a multi-panel display. The parties dispute whether the Modular Display Panel terms should be construed as “singular” and “self-contained.” Plaintiff contends that the claims are not limited to these embodiments. Dkt. No. 297 at 12. According to Plaintiff, the Hall Patents disclose embodiments in which the modular display panels are not “singular” and not “self-contained.” *Id.* at 13 (citing ’782 Patent at 25:9–48; Dkt. No. 297-20 at ¶ 49). Plaintiff further contends that the additional “singular” and “self-contained” limitations are improper attempts to narrow the scope of the claims in a manner that would exclude disclosed embodiments.

Id.

Defendants respond that each embodiment of the invention provides a “completely self-contained” display panel. Dkt. No. 304 at 12 (citing ’782 Patent at 5:53–67, 6:16–20). Defendants further argue that the Hall Patents repeatedly disparage the prior art for not being self-contained and including extraneous components, such as cabinets. *Id.* (citing ’782 Patent at 2:14–15, 4:55–56; Dkt. No. 304-10 at 54:25–55:17). Defendants contend that to avoid the need for a cabinet, the modular display panel must be self-contained to protect the components contained therein. *Id.* Defendants also argue that contrary to Plaintiff’s contention, display panel 1350 is singular and self-contained, including having all claimed components sealed in the panel. *Id.* at 13 (citing ’782

Patent at 25:39–42, 26:43–50, 22:42–23:3, Figures 24A, 22).

Defendants further argue that an additional feature of the Hall Patent modularity is the ability to remove a single display if it malfunctions. *Id.* (citing '782 Patent at 5:26–31, 21:34–53). Defendants contend that the Hall Patents describe numerous “modular display panel” embodiments and each is limited to a single display. *Id.* (citing '782 Patent at 4:53–56; 5:53–67; 6:16–20). Defendants argue that their construction does not exclude any embodiments. *Id.*

Plaintiff replies that the specification specifically refers to different housings encasing different components of the modular display panel. Dkt. No. 307 at 4 (citing '782 Patent at 25:37–42). Plaintiff further argues that the specification also discloses a power supply mounted over the back of the main housing. *Id.* at 4–5 (citing '728 Patent at 24:6–8, Figure 24A (ref 1670), Figure 25D (same ref)). Regarding Defendants’ “singular” limitation, Plaintiff contends that Defendants ignore the function of the “separate data receiver/power box” by stating that it only provides AC power. *Id.* According to Plaintiff, the data receiver box provides more than just AC power, including data and communications, and the disclosed embodiment would not function without it. *Id.* (citing '782 Patent at 25:37–42).

2. Analysis

The Modular Display Panel terms appear in asserted claims 1–6, 9, and 14 of the '904 Patent; claims 1, 2, 5, 10, and 14 of the '272 Patent; claims 1, 4–5, 8, 10, 12–14, and 16 of the '372 Patent; claim 1, 3–6, 9–14, and 16 of the '782 Patent; claims 1, 2, 7–9, 13, 18–20, 22–23, 26–28, and 30 of the '294 Patent; claims 1, 3–8, and 12–16 of '603 Patent; claims 1, 3, 5, 9–11, 13, 14, 16, 19, and 23 of the '869 Patent. The Court agrees with the parties’ proposal that the Modular Display Panel terms should be construed to include “interchangeable.” In one example, the specification states that “the similarity in size of the panels 400 of FIG. 4A and the panel 600

of FIG. 6A enables the panels to be *interchanged* as needed.” ’782 Patent at 10:42–44. (emphasis added). Likewise, the Court agrees that the modular display panel terms are limiting where they appear in the preamble of the claims, because they include “fundamental characteristics” of the invention. *Poly America, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004).

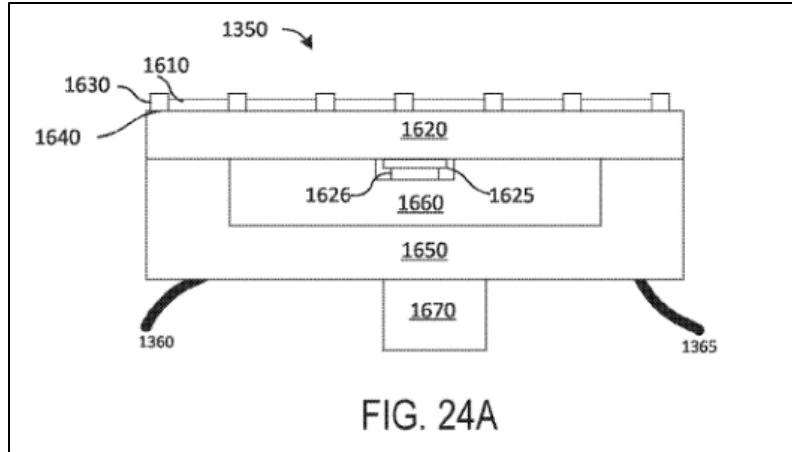
Turning to the parties’ dispute, the specification indicates that a critical feature of the invention is that the recited display panels are not placed inside a cabinet for protection. The specification disparages the prior art by stating that “[o]lder technology incorporates the use of cabinets in order to protect the LED display electronics from rain. This creates an innate problem in that the cabinet must not allow rain to get inside to the electronics, while at the same time the cabinet must allow for heat created by the electronics and ambient heat to escape.” ’782 Patent at 5:6–11. The specification further states that “[e]mbodiments that do not use this cabinet technology avoid a multitude of problems inherent to cabinet-designed displays.” *Id.* at 5:12–14.

One asserted benefit of the disclosed embodiments are that the support frame “does not need to be designed to support heavy cabinets, but need only be able to support the [recited] panels 104a-104t and associated cabling (e.g., power and data cables), and the frame 800 may be lighter than conventional frames that have to support cabinet based structures.” *Id.* at 11:10–15. Thus, the specification states that the recited panels “are designed to protect against weather, without a heavy cabinet.” *Id.* at 4:55–56, *see also, id.* at 5:67–6:4 (“[I]t is understood that … the panel is not placed inside a cabinet that is coupled to the frame 106.”), 20:50–51 (“In various embodiments, the assembled multi-panel display system includes no cabinets.”).

Indeed, Plaintiff’s expert opines that “[o]ne of the goals of the Hall Patents was to develop a modular LED display panel that could be installed without expensive and heavy cabinets.” Dkt. No. 297-20 at ¶ 47. Likewise, Plaintiff explicitly argues that the “non-cabinet” feature is a “critical

feature of the inventions.” Dkt. No. 307 at 4. Accordingly, the Court construes the modular display panel terms to mean “interchangeable display panel for a multi-panel modular display configured for use without a cabinet.” However, to be clear, the Court’s construction does not exclude another component or components from being positioned between the panel and the frame. *See, e.g.*, ’782 Patent at 5:67–6:3 (“By ‘directly,’ another component or components may be positioned between the panel 104a-104t and the frame 106 . . .”). Instead, the construction only excludes from the scope of the claims a panel placed inside a cabinet. *Id.* at 6:2–4.

Turning to Defendants’ construction, Defendants argue that each embodiment of the invention provides a “completely self-contained” display panel. Dkt. No. 304 at 12. Defendants contend that “[i]n order to avoid the need for a cabinet, the modular display panel must be self-contained to protect the components contained therein.” *Id.* at 12. The Court agrees that the intrinsic evidence indicates that the display panels “are designed to protect against weather, without a heavy cabinet.” ’782 Patent at 4:55–56. However, Defendants incorrectly equate the “non-cabinet” feature to “self-contained.” Defendants’ “self-contained” limitation implies that the claimed modular display panel must be contained in a single housing which is contrary to the specification and the plain language of the claims. For example, the specification discloses a power supply, which could be in its own housing, mounted over the back of the main housing. *Id.* at 24:6–8 (“[t]he housing of the power supply unit 1670, which may be made of plastic, may include fins 1671 for maximizing heat extraction . . .”), Figure 24A (ref 1670), Figure 25D (same ref).



Similarly, claim 19 of the '869 Patent recites "a power supply mounted outside the plastic casing."

Accordingly, the Court rejects Defendants' "self-contained" language.

Defendants also propose a "singular" limitation, arguing that a "modular display panel" is no more than a single display. (Dkt. No. 304 at 13). Defendants contend that all of the described embodiments are limited to a single display. *Id.* The Court agrees that the disclosed embodiments include display panels that are connected to form a single display. However, this does not address the use of the term "singular" as Defendants propose. Indeed, Defendants argue that "[d]isplay panel 1350 is singular and self-contained, including having all claimed components sealed in the panel." As discussed above, the Court disagrees that the modular display panels are required to be limited to a single housing. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the Court construes the terms "**display panel[s]**," "**modular display panel[s]**," "**LED display panel[s]**," and "**panel[s]**" to mean "**interchangeable display panel for a multi-panel modular display configured for use without a cabinet.**"

B. Waterproof Terms

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“waterproof”	not indefinite preventing water from entering the interior of the panel when exposed to weather	preventing water from entering (the panel) or indefinite
“sealed to be waterproof”	not indefinite enclosed so as to be waterproof (as construed above)	sealed to prevent water from entering (the panel) or indefinite

1. The Parties' Positions

The parties agree that “waterproof” requires “preventing water from entering [the interior of] the panel,” but disagree on whether the language “when exposed to weather” should be included in the construction. Defendants alternatively contend that these phrases are indefinite. Plaintiff argues that Defendants’ construction divorces the claim from the intended use of the invention, requiring the complete prevention of water entry. Dkt. No. 297 at 14 (citing ’782 Patent at 1:31–34, 4:55–56, 7:46–49). Plaintiff also contends that a person of ordinary skill in the art would understand that the term waterproof requires a level of protection against water ingress so that the product will survive in the environment in which it is installed. *Id.* at 15. (citing Dkt. No. 297-20 at ¶ 52). Plaintiff argues that a person of ordinary skill in the art would not understand the term “waterproof” as used in the asserted claims to refer to preventing water from entering the panels even in conditions that are not relevant to the operation of the panels *Id.* (citing Dkt. No. 297-20 at ¶ 51). Plaintiff further argues that a dictionary definition is consistent with both the discussion in the intrinsic record regarding the intended use for these products as well as the understanding of a person of ordinary skill in the art in this field. *Id.* (citing Dkt. No. 297-20 at ¶ 52).

Finally, Plaintiff contends that the “waterproof” claim terms are not indefinite. *Id.* at 15-16. Plaintiff argues that the claims themselves contemplate different levels of waterproofing. *Id.*

at 16 (citing '782 Patent at 5:1–3, 7:50–52, Claims 1, 6). Plaintiff further argues that the claims are not indefinite just because “waterproof” depends upon the context of the product’s intended use. *Id.* (citing *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365–66 (Fed. Cir. 2017)).

Defendants respond that Plaintiff’s construction is an attempt to change the claim requirement of “waterproof” to “weatherproof.” Dkt. No. 304 at 14 (citing Dkt. No. 304-14 at 4-5, Dkt. No. 301-10 at 120:11-15, 108:24-109:9). Defendants also argue that Plaintiff’s interpretation of its construction is problematic because it is environment dependent. *Id.* at 15. Defendants contend that the manufacturer would not know whether the device infringes until it is shipped and installed. *Id.* According to Defendants, the only way that Plaintiff’s construction of waterproof makes sense is if the panel must be sealed against water entry when exposed to the most extreme weather (such as a hurricane or typhoon). *Id.* (citing Dkt. No. 304-10 at 123:13-21, 107:17-108:1).

Plaintiff replies that displays are not manufactured for installation in just one environment. Dkt. No. 307 at 6. According to Plaintiff, waterproof means protecting the display from the main source of water, which it contends is water caused by rain or snow. *Id.* (citing Dkt. No. 297-20 at ¶ 52). Plaintiff also argues that a display that prevents water entry under Defendants’ extreme weather hypothetical would still not be waterproof. *Id.* Finally, Plaintiff contends that Mr. Credelle’s statements regarding the sealing components do not support Defendants’ position. *Id.* at 6-7.

2. Analysis

The term “waterproof” appears in asserted claim 1 of the '782 Patent; claim 19 of the '869 Patent; claim 22 of the '294 Patent; claim 1 of the '603 Patent; claims 1 and 10 of the '272 Patent; and claims 2 and 11 of the '372 Patent. The Court finds that the term is used consistently in the

claims and is intended to have the same general meaning in each claim. The phrase “sealed to be waterproof” appears in asserted claim 1 of the ’782 Patent; claim 19 of the ’869 Patent; claim 22 of the ’294 Patent; claim 1 of the ’603 Patent; and claims 1 and 10 of the ’272 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim.

The Court further finds that the intrinsic evidence indicates that the patentee intended “waterproof” to mean “ingress protection (IP) rating of IP 65 or higher.” The specification describes “waterproof” in the context of an ingress protection (IP) rating. Plaintiff’s expert describes the IP rating as follows:

One useful reference that a person of ordinary skill in the art would be familiar with when dealing with waterproofing is the Ingress Protection (IP) standard. This standard ... provides a numeric system for evaluating the degree to which a product is protected from dust and water ingress. Under this system, a product may be provided with a two-digit rating in which the first digit reflects the degree to which the product is protected against dust ingress and the second digit reflects the degree to which the product is protected against water ingress.

Dkt. No. 297-20 at ¶ 54. Referring to the IP rating, the specification states the following:

In the present example, the housing 220 is sealed to prevent water from entering the housing. For example, the housing 220 may be sealed to have an ingress protection (IP) rating such as IP 67, which defines a level of protection against both solid particles and liquid. This ensures that the panel 200 can be mounted in inclement weather situations without being adversely affected. In such embodiments, the cooling is passive as there are no vent openings for air intakes or exhausts. In other embodiments, the housing may be sealed to have an IP rating of IP 65 or higher, e.g. IP 65, IP 66, IP 67, or IP 68.

’782 Patent at 7:42–52. The specification also describes the IP rating in the context of a potting material, and states that it “is useful for environmental protection, e.g., to achieve an IP rating of IP 65 or higher.” *Id.* at 7:18–19. Likewise, the specification states that “the equipment can be designed with an IP 68 rating to operate completely underwater,” and that “[i]n lower-cost embodiments where weatherproofing is not as significant, the panels can have an IP 65 or IP 66 rating.” *Id.* at

4:67–5:3.

The claims further indicate that the patentee intended “waterproof” to mean “ingress protection (IP) rating of IP 65 or higher.” For example, claim 1 of the ’782 Patent requires that the claimed modular display panel “is sealed to be waterproof,” and claim 6, which depends from claim 1, further requires that the panel “comprise[] an ingress protection (IP) rating of IP 65, IP 66, IP 67, or IP 68.” Accordingly, a person of ordinary skill in the art would understand that the claims specifically contemplate that a panel with an IP water-rating of ‘5’ may be “waterproof.” Dkt. No. 297-20 at ¶ 57.

Furthermore, the prosecution history indicates the patentee intended “waterproof” to mean “ingress protection (IP) rating of IP 65 or higher.” In distinguishing the prior art, the patentee argued that it “does not teach a specific degree of sealing or the *waterproofing* of display modules,” and that “even if [the prior art] did describe waterproofing of display panels, [the prior art] is silent regarding any ingress protection (IP) rating.” Dkt. No. 304-5 at 10 (emphasis in original). Accordingly, the intrinsic evidence indicates that a person of ordinary skill in the art would understand “waterproof” to mean “ingress protection (IP) rating of IP 65 or higher.” To be clear, terms like “waterproof” do not necessarily require a standard to be construed. However, in the context of the Asserted Patents in this case, the intrinsic evidence indicates that the patentee intended “waterproof” to refer to an IP rating.

Regarding the dispute over Plaintiff’s proposed “when exposed to weather” language, the Court finds that this language is ambiguous and would not provide any bounds for the scope of the claims. This language would make the scope of the claims either environment dependent or so open-ended that it would render the term “weatherproof” meaningless. In other words, a manufacturer would not know whether the device infringes until it is shipped and installed. Claim

language that is not “sufficiently precise to permit a potential competitor to determine whether or not he is infringing” should be rejected. *PureChoice, Inc. v. Honeywell Int'l, Inc.*, No. 2:06-CV-244, 2008 U.S. Dist. LEXIS 4246, at *19 (E.D. Tex. Jan. 22, 2008) (citing *Morton Int'l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993)). Moreover, Plaintiff’s proposal would change the claim requirement of “waterproof” to “weatherproof.” As discussed above, the patentee intended “waterproof” to refer to an IP rating.

Turning to Defendants’ construction, the Court rejects Defendants’ construction because it would appear to require levels of protection against every possible condition, including conditions that the panels would never be expected to operate in. Indeed, Defendants argue that under Plaintiff’s proposal “the panel must be sealed against water entry when exposed to the most extreme weather (such as a hurricane or typhoon).” Dkt. No. 304 at 16. In other words, Defendants’ construction unduly narrows the scope of the claims because it requires preventing water from entering for every possible scenario. This is inconsistent with the specification that describes IP ratings and provides examples of different levels of waterproof protection. ’782 Patent at 4:64–5:3 (“IP 67 rating provides weatherproofing with significant weather protection. These panels are completely waterproof against submersion in up to 3 feet of water. In other embodiments, the equipment can be designed with an IP 68 rating to operate completely underwater.”). Accordingly, the Court rejects Defendants’ construction. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court’s Construction

For the reasons set forth above, the Court construes the term “**waterproof**” to mean “**ingress protection (IP) rating of IP 65 or higher**.” The Court further construes the term “**sealed**

to be waterproof” to mean “sealed to have an ingress protection (IP) rating of IP 65 or higher.”

C. “housing” / “shell” / “casing”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“housing” / “shell” / “casing”	plain and ordinary meaning or, in the alternative “an [at least] partially protective enclosure containing components of the LED display panel”	“an enclosure with sidewalls and a back side”

1. The Parties’ Positions

The parties agree that the terms “housing,” “shell,” and “casing” are used interchangeably in the claims of the Hall Patents. The parties dispute whether the recited “housing,” “shell,” and “casing” must include “sidewalls and a back side,” as Defendants propose. Plaintiff argues that Defendants’ construction improperly requires the casing to completely enclose the components (*i.e.*, be an “enclosure”). Dkt. No. 297 at 17. Plaintiff contends that a person of ordinary skill in the art would not understand these terms to be limited to an enclosure. *Id.* (citing ’782 Patent, 7:15–19, 7:3–8, 7:8–14; Dkt. No. 297-20 at ¶¶ 61–67). Plaintiff further argues that the Hall Patents explicitly disclose embodiments in which the PCB cannot be enclosed within the casing. *Id.* (citing ’782 Patent at 6:54–59; Dkt. No. 297-20 at ¶ 65). Plaintiff also argues that a casing need not have separate “sidewalls” and a “back side,” and that these particular features are only recited in some of the claims. *Id.* at 18 (citing ’782 Patent at Claim 1; ’603 Patent at Claim 1; ’869 Patent at Claims 1, 14; ’782 Patent at 8:48–52; Dkt. No. at ¶ 66).

Defendants respond that their construction must be adopted because the specification states that the “housing” “encloses” the components contained therein. Dkt. No. 304 at 16-17 (citing ’782 Patent at 24:22–27). Defendants contend that Plaintiff has consistently distinguished the patented “modular display panel” from LED displays that rely on cabinets or frames to protect

them from the ingress of water. *Id.* at 17. Defendants argue that a casing having side walls and a back side is necessary to confer this protection. *Id.* (citing '782 Patent at 21:61–64). Defendants further argue that every disclosed embodiment describes an enclosure with side walls and a back side. *Id.* (citing '782 Patent at 22:7–15, 2:18–27, 8:4–5, 22:7–11).

Defendants also argue that their construction does not require the casing to completely enclose the components, but instead only propose that the term be construed to mean “an enclosure with sidewalls and a back side.” *Id.* at 18. Defendants contend that their construction does not require the side walls and the back side to be perpendicular and does not preclude that the two are integrated together. *Id.* According to Defendants, there is nothing in the specification supporting the idea that the housing only partially encloses the backside of the panel. *Id.*

Plaintiff did not provide any arguments related to these terms in its Reply Brief.

2. Analysis

The terms “housing,” “shell,” or “casing” appears in either asserted claims 1 and 12 of the '782 Patent; claim 19 of the '869 Patent; claims 22 and 23 of the '294 Patent; claims 1, 4, 8, 10, 12, and 16 of the '372 Patent; claims 1, 4, and 15 of the '603 Patent; and claims 1, 5-7, 10, and 14 of the '272 Patent. The Court agrees with the parties that the terms are used interchangeably in the claims and are intended to have the same general meaning in each claim. The Court further finds that the terms “housing,” “shell,” and “casing” are unambiguous, are easily understandable by a jury, and should be given their plain and ordinary meaning.

The plain language of the claims define the structural requirements for the respective “housing,” “shell,” and “casing.” For example, claim 1 of the '782 Patent recites that the shell has sidewalls, and that the printed circuit board and driver circuit are disposed in the shell. Similarly, claim 1 of the '603 Patent recites that the casing includes sidewalls and a back surface, and that

the driver circuit is disposed in the casing. Thus, the claims recite when these particular features are required. Accordingly, Defendants' construction is unnecessary and could improperly narrow the scope of the claims.

Defendants argue that the specification states that the "housing" "encloses" the components contained therein (such as, for example, the LED board). Dkt. No. 304 at 16. According to Defendants, every disclosed embodiment describes an enclosure with side walls and a back side, and that these are necessary to protect from the ingress of water. *Id.* at 17. As discussed above, the claim language itself describes the structural requirements for the recited "housing," "shell," and "casing." Defendants have not provided a persuasive reason to redraft the claim language to read in additional structural elements. As indicated in the specification, there is more than one way to protect from the ingress of water. '782 Patent at 7:14–19 ("As one example, a potting material can be formed over the LEDs 216. This material can be applied as a liquid, e.g., while heated, and then harden over the surface, e.g., when cooled. This potting material is useful for environmental protection, e.g., to achieve an IP rating of IP 65 or higher.). Accordingly, the Court rejects Defendants' construction. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the terms "**housing**," "**shell**," and "**casing**" are given their **plain and ordinary meaning**.

D. Power Supply Mounting / Protruding Terms

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“power supply mounted over the outer surface of the modular display panel”	not indefinite plain and ordinary meaning	“power supply mounted to the outside surface of the modular display panel”
“power supply mounted outside the plastic casing”	plain and ordinary meaning	“power supply mounted to the outside surface of the casing of the modular display panel”
“power supply unit mounted outside the casing”		
“[wherein] the power converter is mounted outside the casing”		
“power supply unit protrudes from the back surface of the casing”	plain and ordinary meaning	“power supply mounted to the outside surface of the casing of the modular display Panel”

1. The Parties' Positions

The parties dispute whether the terms “mounted over,” “mounted outside,” and “protrudes from” should be construed to mean “mounted to the outside surface,” as Defendants propose. Plaintiff argues that these claim terms are plain English phrases that are not terms of art and incorporate other terms that are already being construed (power supply, power supply unit, modular display panel). Dkt. No. 297 at 19. Plaintiff contends that the phrase “outside surface” is not found in the specification or prosecution history. *Id.* Plaintiff argues that there is no basis to substitute Defendants’ preferred words for the claim language. *Id.* at 20. Plaintiff further argues that the term “power supply mounted over the outer surface of the modular display panel” is not indefinite. *Id.* at 20-21 (citing Dkt. No. 297-20 at ¶¶ 107–115).

Defendants argue that their proposal is consistent with the plain meaning, and makes it clear that the power supply is mounted to the outside surface of the casing. Dkt. No. 304 at 18.

According to Defendants, every embodiment from the specification reads consistently with their construction. *Id.* at 19 (citing '869 Patent at 23:32–33, Figure 24A). Defendants contend that Plaintiff's expert, Mr. Credelle, provided an illustrative example that emphasizes Defendants' construction is the right one. *Id.* (citing Dkt. No. 297-21 at ¶ 111). Defendants also contend that Plaintiff's interpretation of the claim language envisions scenarios where the power supply is mounted to something other than the back surface of the panel. *Id.* at 20. Defendants argue that this interpretation would wrongly include embodiments where the power supply is mounted to extraneous components such as a cabinet. *Id.* (citing Dkt. No. 304-7 at 12). Defendants contend that the power supply is mounted to the claimed panel, not something else. *Id.* at 20.

Plaintiff replies that all the claims require is that the power supply be "mounted over," "mounted outside," or "protrude[] from" the modular display panel. Dkt. No. 307 at 7. Plaintiff argues that Defendants' specific requirement as to how the power supply is mounted, rather than where, should be rejected. *Id.* at 7. Plaintiff agrees that Figure 24A shows the power supply being mounted to the rear of the casing, but contends that this is an embodiment and to limit the claims to this embodiment would be error. *Id.*

2. Analysis

The Power Supply Mounting / Protruding Terms appear in asserted claim 19 of the '869 Patent; claim 22 of the '294 Patent; and claims 8 and 16 of the '372 Patent; and claim 4 of the '603 Patent. The Court finds that the terms are used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the terms "mounted over," "mounted outside," and "protrudes from" are unambiguous, are easily understandable by a jury, and should be given their plain and ordinary meaning. The disputed phrases are not terms of art with the exception of power supply, power supply unit, and modular display panel, which are being

construed by the Court. Moreover, the phrase “outside surface” is not found in the specification or prosecution history. Accordingly, Defendants have failed to provide a persuasive reason to redraft the terms “mounted outside,” “mounted over,” and “protrudes from” to their proposed language of “mounted to the outside surface.”

Defendants are correct that Figure 24A shows the power supply being mounted to the rear of the casing, but this is an exemplary embodiment. Defendants have not shown that the claims should be limited to this embodiment. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004) (“[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.”). Similarly, the Court is not persuaded that the patentee clearly and unmistakably disclaimed all embodiments except those where the power supply is mounted to the outside surface in the prosecution history of the U.S. Patent No. 9,195,281. *Thorner*, 669 F.3d at 1366 (“The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”) (citing *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002)).

Accordingly, the Court rejects Defendants’ construction because there is no basis to substitute Defendants’ preferred words for the claim language. *Straight Path IP Grp., Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1361 (Fed. Cir. 2015) (“[U]nless there is a disclaimer or redefinition ... the proper construction of any claim language must ... stay true to the claim language, and ... avoid giving invention-defining effect to specification language included for other descriptive and enablement purposes ...”) (citing *Phillips*, 415 F.3d at 1316, 1323, 1324) (internal quotation marks omitted). Finally, in reaching its conclusion, the Court has considered the extrinsic evidence

submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the phrases “**power supply mounted over the outer surface of the modular display panel**,” “**power supply mounted outside the plastic casing**,” “**power supply unit mounted outside the casing**,” “[wherein] **the power converter is mounted outside the casing**,” and “**power supply unit protrudes from the back surface of the casing**” are given their **plain and ordinary meaning**.

E. “each display panel includes ... a power supply”

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“each display panel includes ... a power supply”	plain and ordinary meaning	each [LED] display panel [also] includes its own power supply (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants only)

1. The Parties' Positions

The parties dispute whether the phrase requires one power supply for each modular display panel, as Defendants propose. Plaintiff argues that Defendants' construction improperly implies a 1:1 ratio between power supplies and display panels. Dkt. No. 297 at 21. Plaintiff further argues that a modular multi-panel display system could be assembled in which a single power supply is used for multiple LED display panels. *Id.* Plaintiff contends that if the plain and ordinary meaning of “include” required that each panel have “its own” power supply, then Defendants would not need to construe this term to add the words “include.” *Id.* Plaintiff argues that the patentee did not act as a lexicographer to redefine this term to require each display panel to have its own power supply, and did not explicitly disclaim embodiments in which a power supply is included in multiple display panels. *Id.* at 22.

Defendants respond that the claim expressly requires that “each display panel” include a

power supply. Dkt. No. 304 at 20. Defendants argue that this means that each display panel must have its own power supply. *Id.* Defendants contend that the patentee argued during prosecution of the U.S. Patent No. 9,195,281 (parent of the '272 Patent) that the “each display panel” language required one power supply for each display panel. *Id.* at 21 (citing Dkt. No. 304-7 at 11-12). Defendants argue that Plaintiff should be bound by these statements. *Id.*

Plaintiff replies that the examiner rejected claims of far different scope over U.S. Patent Publication No. 2012/0236509 (“Cope”) in the '281 Patent’s file history. Dkt. No. 307 at 8. Plaintiff argues that the claim at issue there required the power supply to be mounted “outside” the housing, but the Examiner had interpreted the power supply to be mounted inside the housing. *Id.* Plaintiff contends that Defendants’ brief points out the inconsistency of the Examiner’s interpretation of Cope. *Id.* According to Plaintiff, Cope was only distinguished as not containing a “housing,” and not disclosing “a power supply unit outside the housing.” *Id.* (citing Dkt. No. 307-12). Plaintiff argues that Cope was not distinguished based on the feature that each panel contains its own power supply during prosecution. *Id.*

2. Analysis

The phrase “each display panel includes … a power supply” appears in asserted claims 1 and 10 of the '272 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the plain language of the claim requires each panel to include a power supply. Claims 1 and 10 of the '272 Patent recite the elements of a “mechanical support structure” and “a plurality of display panels.” The claims further require that “each display panel includes: an array of display elements … a display driver … a housing … a receiver circuit … and a power supply”

Plaintiff argues that this language does not imply a 1:1 ratio between power supplies and

display panels. Dkt. No. 297 at 21. According to Plaintiff, a modular multi-panel display system could be assembled in which a single power supply is used for multiple LED display panels. *Id.* Contrary to Plaintiff's contention, what "could be assembled" is not what defines the scope of the claims. Instead, it is what the claim language actually recites, and here the claims recite that "each" display panel includes a power supply.

This plain reading of the claim is further confirmed by arguments made during prosecution of the '281 Patent (parent of the '272 Patent). Specifically, the patentee argued that the power supply in the prior art is "not part of *each panel* but [is] rather common to the whole display system, i.e. there is just *one* power supply 1190 . . . irrespective of the number of display modules 1131." Dkt. No. 304-7 at 11-12) (emphasis in original). This argument further informs the plain and ordinary meaning of this common subject matter. *See E.I. du Pont De Nemours & Co. v. Unifrax I LLC*, 921 F.3d 1060, 1067 (Fed. Cir. 2019) ("When a parent application includes statements involving 'common subject matter' with the terms at issue, those statements are relevant to construction of the terms in the child patent.") (citation omitted).

Plaintiff argues that the patentee only distinguished the prior art as not containing a "housing," and not disclosing "a power supply unit outside the housing." Dkt. No. 307 at 8. According to Plaintiff, "[t]here was no distinguishing of [the prior art] based on the feature that each panel contains its own power supply during prosecution." *Id.* The Court disagrees. As indicated above, the patentee explicitly argued that the prior art failed to disclose a power supply for each panel, because it only disclosed one power supply.

Plaintiff is correct that the patentee also argued that the prior art failed to disclose a power supply unit attached to the outside of the housing. *See* Dkt. No. 340-7 at 12. However, this was an additional distinguishing aspect of the amended claim, which necessarily requires that each panel

have a corresponding power supply. It would be improper to require the power supply to be attached to the outside of the housing in this instance. However, it is not improper to require “each” display panel to include a power supply, because it is the plain language of the claim that is further informed by the arguments made during prosecution.

3. Court’s Construction

For the reasons set forth above, the Court construes the phrase “**each display panel includes ... a power supply**” to mean “**each display panel includes ... its own power supply**.”

F. Thermally Conductive Material Terms

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“thermally conductive material” / “first thermally conductive material” / “second thermally conductive material”	<i>plain and ordinary meaning</i>	“material that includes a metal or a substance of equal or higher thermal conductivity for conducting heat”
“thermally conductive material ... disposed proximate to the power supply”		

1. The Parties’ Positions

The parties dispute whether the term “thermally conductive material” requires construction. Defendants contend that the term must be construed as “material that includes a metal or a substance of equal or higher thermal conductivity for conducting heat.” Plaintiff argues that a material need not include a substance of equal or higher thermal conductivity to metal in order to adequately conduct heat. Dkt. No. 297 at 22. Plaintiff further argues that the Hall Patents teach that certain components of the claimed modular display panel can be constructed out of a “thermally conductive material” in order to aid in the cooling of the panel. *Id.* at 23 (citing Dkt. No. 297-20 at ¶¶ 70–71; ’782 Patent at 24:27–29). Plaintiff contends that depending on the

particular modular display panel, different materials could be used, including those that do not include substances of equal or higher thermal conductivity to metal. *Id.* (citing Dkt. No. 297-20 at ¶ 72). According to Plaintiff, a person of ordinary skill in the art “would be familiar with how to select an appropriate thermally conductive material based on the design needs to a particular modular LED display.” *Id.* (citing Dkt. No. 297-20 at ¶ 71).

Plaintiff further argues that Defendants’ construction is improper because it renders the claims nonsensical and excludes the plastic embodiments disclosed in the specification. *Id.* at 24 (citing ’782 Patent at 24:22–25, Claims 1, 9, 14; Dkt. No. 297-20 at ¶¶ 62, 72; Dkt. No. 297-22 at ¶ 29). Plaintiff also argues that Defendants’ expert, Dr. Watts, repeatedly states that a material need not have a thermal conductivity that is “equal or higher” to metal in order to be a “thermal conductive material.” *Id.* (citing Dkt. No. 297-22 at ¶¶ 30, 32, 35, 36). Plaintiff contends that Dr. Watts’s opinion that “thermally conductive material” should be construed as Defendants propose is not based on any technical expertise. *Id.* at 25 (citing Dkt. No. 297-22 at ¶ 35). Plaintiff also contends that Dr. Watts only considered whether there were particular limits on the term “thermally conductive material” in the abstract. *Id.* at 26. According to Plaintiff, “thermally conductive material” has a plain and ordinary meaning that the patentee did not depart from. *Id.*

Defendants respond that their construction should be adopted, because leaving “thermally conductive” unconstrued effectively gives it no meaning and reads it out of the claims. Dkt. No. 304 at 21-22. Defendants argue that the Hall Patents repeatedly and consistently characterize “thermally conductive material” as material that is or includes a metal or a substance with an equal or higher thermal conductivity. *Id.* at 22 (citing ’782 Patent at 7:53–56, 7:65–8:1, 18:48–52, 24:29–31; Dkt. No. 297-22 at ¶ 45). According to Defendants, the patents never refer to a material that does not contain a metal or a material with an equal or higher thermal conductivity as a “thermally

conductive material.” *Id.* at 22-23 (citing Dkt. No. 297-22 at ¶¶ 31, 49-53).

Defendants also argue that the claims never require that the thermally conductive material “be” plastic. *Id.* at 23. Defendants contend that all but one claim identified by Plaintiff state the “thermally conductive material comprise[s] plastic.” *Id.* at 23. Defendants argue that these claims cover a thermally conductive material comprising “plastic” along with a metal or a material of equal or higher thermal conductivity. *Id.* (citing Dkt. No. 297-22 at ¶ 47). Defendants also contend that the claims do not cover embodiments in which the housing is made of industrial plastic, because the disclosed “industrial plastic” is never described in the patents as a “thermally conductive material.” *Id.* at 23-24 (citing ’782 Patent at 7:65–8:3, 24:22–31).

Defendants argue that Dr. Watts explains that the Hall Patents define “thermally conductive material” by repeatedly and consistently referring to “thermally conductive materials” as metals or materials containing metals. *Id.* at 24 (citing Dkt. No. 297-22 at ¶¶ 36, 39-48). Defendants also argue that Mr. Credelle testified that a display’s casing material is a thermally conductive material even if the casing fails to conduct sufficient heat from the display device. *Id.* at 24-25 (citing Dkt. No. 304-10 at 253:10-254:2). Finally, Defendants contend that the Hall Patents never express a “sufficiency” threshold for identifying a “thermally conductive material.” *Id.* at 25.

Plaintiff replies that Defendants’ construction narrows the term “thermally conductive material” beyond its plain and ordinary meaning. Dkt. No. 307 at 9. Plaintiff contends that the claims themselves specify that the thermally conductive material can be plastic. *Id.* According to Plaintiff, Defendants’ narrowing construction should be rejected. *Id.*

2. Analysis

The Thermally Conductive Material terms appear in asserted claims 1-3 and 9 of the ’782 Patent; claims 1, 14, and 19 of the ’869 Patent; claims 1, 3, 12, and 14 of the ’603 Patent; and

claims 6 and 15 of the '272 Patent. The Court finds that the Thermally Conductive Material terms are used consistently in the claims and are intended to have the same general meaning in each claim. The Court further finds that the Thermally Conductive Material terms should be construed to mean "material that includes plastic, metal, or a substance of equal or higher thermal conductivity."

Defendants argue that both parties' experts agree that all materials are "thermally conductive materials." Dkt. No. 304 at 21. Defendants contend that leaving "thermally conductive" unconstructed effectively gives the term no meaning, and reads the term out of the claims. *Id.* The Court agrees, but does not adopt Defendants' construction because it would improperly exclude disclosed embodiments by limiting the material to "metals" or "a substance of equal or higher thermal conductivity." For example, certain claims recite that the "thermally conductive material" comprises plastic. '782 Patent at Claim 1 ("a shell comprising a first thermally conductive material, wherein sidewalls of the shell comprise plastic"), Claim 9 ("wherein the first thermally conductive material comprises plastic"); '603 Patent at Claim 14 ("wherein the first thermally conductive material comprises plastic"). Plaintiff argues that plastic is a material known to have a lower thermal conductivity than metal. *See, e.g.*, Dkt. No. 297-21 at ¶¶ 62, 72; Dkt. No. 297-22 at ¶ 29).

Consistent with the claims, the specification discloses that "[a] plastic material, e.g., an industrial plastic, can be used for the housing" of the claimed display panel. '782 Patent, 24:22–25. The specification states that "[t]he housing of the power supply unit 1670, which may be made of plastic, may include fins 1671 for maximizing heat extraction from the power supply unit 1670." *Id.* at 24:6–8. Thus, Defendants' construction would improperly exclude these claimed and disclosed embodiments. Indeed, in the context of an inter partes review petition with respect to the

'782 Patent, the Patent Trial and Appeal Board ("PTAB") concluded that "that Petitioner has made an adequate showing that the plastic of casing base 2 is thermally conductive." Dkt. No. 304-11 at 4.

The specification includes embodiments where the thermally conductive material is a metal or a material that includes a metal. '782 Patent at 7:53–56 (identifying "aluminum" as a thermally conductive material), 7:65–8:1 (same), 18:48–52 ("metal plate" or "a rubber material embedded with metal particles"), 24:29–31 ("aluminum" or "thermal grease"). However, the Court disagrees that the specification repeatedly and consistently characterizes this as the "thermally conductive material," as Defendants contend. Likewise, the Court disagrees with Defendants' contention that the patent "never" identifies "plastic" as the recited "thermally conductive material." Dkt. No. 304 at 23. As discussed above, certain claims recite that the "thermally conductive material comprises plastic." 782 Patent at Claim 9. "Comprise" is an open-ended term, as Defendants agree, but it by no means requires adding an unrecited "metal or a material equal or higher thermal conductivity." Dkt. No. 304 at 23. Instead, it requires the thermally conductive material to include plastic, in whole or in part. Accordingly, the Court rejects Defendants' construction. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the Court construes the terms "**thermally conductive material**," "**first thermally conductive material**," "**second thermally conductive material**," and "**thermally conductive material ... disposed proximate to the power supply**" to mean "**material that includes plastic, metal, or a substance of equal or higher thermal**

conductivity.”

G. Plastic Terms³

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“plastic housing”	“housing constructed primarily of plastic”	“[casing / shell / sidewalls of the casing / housing] constructed partly out of plastic” (Ledman, and Samsung Defendants)
“plastic casing”	“casing constructed primarily of plastic” (Absen, Prismaflex, and Yaham Defendants)	“[casing / shell / sidewalls of the casing / housing] constructed partly out of plastic” (Barco, Ledman, and Samsung Defendants)
“casing comprising plastic sidewalls”	“casing comprising sidewalls constructed primarily of plastic”	“[casing / shell / sidewalls of the casing / housing] constructed partly out of plastic” (Barco, Ledman, and Samsung Defendants)
“comprise[s] plastic”	“constructed primarily of plastic”	“[casing / shell / sidewalls of the casing / housing] constructed partly out of plastic” (Barco, Ledman, and Samsung Defendants only)
“the sidewalls of the casing comprising plastic”	“the sidewalls of the casing are constructed primarily of plastic” (Absen, Prismaflex, and Yaham Defendants only)	“[casing / shell / sidewalls of the casing / housing] constructed partly out of plastic” (Barco, Ledman, and Samsung Defendants)

³ It appears that Defendants Absen, Prismaflex, and Yaham previously agreed with Plaintiff regarding the constructions of “plastic casing,” “the sidewalls of the casing comprise plastic,” “the shell comprise[s] plastic,” “the casing comprises a plastic casing,” and “the housing comprises a plastic housing.” Dkt. No. 215-1 at 1. Plaintiff states that these defendants subsequently stated that their position is that these terms “do not need to be construed.” Dkt. No. 297 at 27 n.12. The Court will provide a construction for all of the identified Plastic Terms.

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“the sidewalls of the shell comprising plastic”	“the sidewalls of the shell are constructed primarily of plastic” (Barco, Ledman, and Samsung Defendants only)	“[casing / shell / sidewalls of the casing / housing] constructed partly out of plastic”
“the shell comprise[s] plastic”	“the shell is constructed primarily of plastic” (Absen, Prismaflex, and Yaham Defendants)	
“the casing comprises a plastic casing”	“the casing comprises a casing constructed primarily of plastic” (Absen, Prismaflex, and Yaham Defendants only)	
“the housing comprises a plastic housing”	“the housing comprises a housing constructed primarily of plastic” (Absen, Prismaflex, and Yaham Defendants only)	

1. The Parties' Positions

The parties dispute whether the term “plastic” requires “primarily” plastic, as Plaintiff proposes, or “partly” plastic, as Defendants contend. Plaintiff argues that the Hall Patents describe the benefits of using plastic components. Dkt. No. 297 at 27 (citing ’782 Patent at 4:56–59, 8:1–3). Plaintiff further argues that a person of ordinary skill in the art would understand that any weight benefits of using plastic would not be realized if a metal panel had only the smallest amount of plastic. *Id.* Plaintiff contends that its construction recognizes “plastic” means that the structure is primarily constructed of plastic. *Id.*

Defendants respond that the use of “comprise” does not require that a structure be made primarily of the components following “comprise.” Dkt. No. 304 at 25. Defendants argue that in the context of an inter partes review petition with respect to the ’782 Patent, the Patent Trial and

Appeal Board (“PTAB”) came to this very conclusion in construing “sidewalls of the shell comprise plastic.” *Id.* (Dkt. No. 304-11 at 4). Defendants contend that Plaintiff’s contention that Defendants’ proposal is overbroad is misguided and contrary to the patents. *Id.* at 26 (citing ’782 Patent at 7:65–8:1).

Plaintiff replies that the PTAB’s construction cited by Defendants is not instructive, because it only determined that “part of” the shell’s sidewalls to be plastic. Dkt. No. 307 at 9. Plaintiff argues that it has presented expert testimony that a minute amount of plastic in an otherwise metal display would not have been understood by the person of ordinary skill in the art to be a “plastic housing.” *Id.*

2. Analysis

The Plastic terms appears in asserted claims 7 and 16 of the ’272 Patent; claims 1, 9 and 14 of the ’782 Patent; claims 1, 14, and 19 of the ’869 Patent; claims 1, 13, and 22-23 of the ’294 Patent; claims 4, 8, 12, and 16 of the ’372 Patent; and claims 1 and 14 of the ’603 Patent. The Court finds that the Plastic terms are used consistently in the claims and are intended to have the same general meaning in each claim. It is first important to note that the parties are not asking the Court to construe the term “plastic,” because the term “plastic” is included in both parties’ construction. Instead, the parties are asking the Court to determine the scope of the term “comprises” via their proposed constructions, which suit their respective positions.

It is well established that “comprising” is a term of art in patent law meaning “I claim at least what follows and potentially more.” *Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1383 (Fed. Cir. 2000). How little or how much more is to be determined in the context of the intrinsic and extrinsic evidence. The claims generally recite a “plastic housing,” which means that it has to include at least some plastic so that a person of ordinary skill in the art would identify it as

a “plastic housing.” Accordingly, the Court’s constructions reflect that when the disputed terms include the word “comprising plastic,” it means at least partly of plastic. Otherwise, “plastic” means exactly what the parties’ agree that it means, which is “plastic.”

3. Court’s Construction

For the reasons set forth above, the Court construes the Plastic terms as follows:

<u>Term</u>	<u>Construction</u>
“plastic housing”	“housing constructed of plastic”
“plastic casing”	“casing constructed of plastic”
“casing comprising plastic sidewalls”	“casing comprising sidewalls constructed of plastic”
“comprise[s] plastic”	“constructed at least partly out of plastic”
“the sidewalls of the casing comprising plastic”	“the sidewalls of the casing constructed at least partly of plastic”
“the sidewalls of the shell comprising plastic”	“the sidewalls of the shell constructed at least partly of plastic”
“the shell comprise[s] plastic”	“the shell constructed at least partly of plastic”
“the casing comprises a plastic casing”	“the casing is constructed of plastic”
“the housing comprises a plastic housing”	“the housing is constructed of plastic”

H. Attachment Point Terms

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“attachment points” / “attachment points for use in attachment as part of a multipanel modular display”	plain and ordinary meaning or, in the alternative “points for attachment”	“points for attachment with adjacent display panels”

1. The Parties’ Positions

The parties dispute whether the “attachment points” are strictly for attachment with “adjacent display panels,” as Defendants propose. Plaintiff argues that Defendants’ construction is contrary to the plain meaning of the claims, and contrary to the specification, which describes attachment points that attach each display panel to a frame, rather than to each other. Dkt. No. 297 at 28. Plaintiff further argues that the specification also describes “attachment features 1490,”

which attach to a plate that holds the display onto a beam-type frame, rather than attaching to adjacent display panels. *Id.*

Defendants respond that the Hall Patents consistently describe an “attachment point” as an attachment to an adjacent display panel. Dkt. No. 304 at 26 (citing ’782 Patent at 25:9–11, 25:12–18, 2:6–7). Defendants argue that the Hall Patents never use “attachment points” in any other context. *Id.* at 27. Defendants contend that Plaintiff’s reference to Figure 14 does not address the meaning of “attachment points,” but instead refers to “attachment features 1490.” *Id.* Defendants argue that it is the connection between attachment plate 1450 and display panel 1350 used to secure the LED panel to the frame. *Id.* (citing ’782 Patent at 18:34–36, 17:1–6). According to Defendants, the patentee claimed “attachment points,” and not “attachment features,” which the specification makes clear are different. *Id.*

Plaintiff did not provide any arguments related to these terms in its Reply Brief.

2. Analysis

The Attachment Point terms appear in asserted claim 12 of the ’782 Patent; claim 22 of the ’294 Patent; claim 15 of the ’603 Patent; claims 1 and 10 of the ’372 Patent. The Court finds that the Attachment Point terms are used consistently in the claims and are intended to have the same general meaning in each claim. The Court further finds that the Attachment Point terms should be given their plain and ordinary meaning.

The claim language recites “attachment points” without requiring these points to be “points for attachment with adjacent display panels.” For example, claim 12 of the ’782 Patent only requires “attachment points for use in attachment as part of a multi-panel modular display.” Contrary to Defendants’ contention, the specification does not exclusively use the term “attachment points” to describe points for attachment with adjacent display panels. Instead, the

specification provides one embodiment that describes an “interlocking attachment point” as an attachment to an adjacent display panel. ’782 Patent at 25:12–18. Unlike the specification, the claims do not further qualify the term “attachment points” as an “interlocking” attachment points. Defendants have not provided a persuasive reason to limit the claims to this embodiment.

The specification also describes “attachment features 1490,” disclosed in Figure 14, which attach to a plate that holds the display onto a beam-type frame, rather than attaching to adjacent display panels. ’782 at 17:4–6 (“The attachment plate 1450 may comprise holes through which attachment features 1490 may be screwed in, for example.”). This embodiment also does not mention or require “attachment with adjacent display panels.” Accordingly, the Court rejects Defendants’ construction.

3. Court’s Construction

For the reasons set forth above, the terms **“attachment points”** and **“attachment points for use in attachment as part of a multipanel modular display”** are given their **plain and ordinary meaning**.

I. “wherein the pitch does not depend on the height and width” / “wherein the fixed distance does not depend on the height and the width”

Disputed Term	Plaintiff’s Proposal	Defendants’ Proposal
“wherein the pitch does not depend on the height and the width” / “wherein the fixed distance does not depend on the height and the width”	not indefinite / plain and ordinary meaning	Indefinite (Absen, Prismaflex, and Ledman Defendants)

1. The Parties’ Positions

The parties dispute whether the disputed phrases are indefinite. Plaintiff argues that the term “fixed distance” refers to the distance that the LEDs are spaced from each other. Dkt. No.

297 at 29. Plaintiff contends that these claim terms require that this distance between LEDs/pixels “does not depend on the height and [the] width” of the casing in which the LEDs are disposed. *Id.* Plaintiff further argues that the expert testimony of Mr. Thomas Credelle establishes that these terms would be “readily understand[ed] by a [POSITA].” *Id.* According to Plaintiff, a person of ordinary skill in the art in the art would understand that this relates to the teachings of the ’372 Patent that enable “a number of different resolution display panels [to be] manufactured and sold ... hav[ing] the same physical dimensions.” *Id.* at 29 (citing ’372 Patent at 2:66–3:2).

Defendants respond that the phrase “does not depend on the height and width” does not appear anywhere in the ’372 Patent except asserted claims 1 and 10. Dkt. No. 304 at 28. Defendants note that the applicant added this limitation during prosecution after the examiner issued a final rejection. *Id.* (citing Dkt. No. 304-6 at 10). Defendants argue that the patentee tried to disclaim the formula that pixel pitch equals the panel height divided by the number of pixels in a column. *Id.* Defendants contend that this makes the disputed phrase meaningless because a person of ordinary skill in the art cannot distinguish, with reasonable certainty, between modular display panels which do and do not infringe. *Id.* at 28-29.

Defendants argue that Plaintiff tries to try to rewrite the claim using the language that needed to be deleted from the claims in order to overcome the prior art. *Id.* at 29. According to Defendants, Plaintiff’s proposal is no different than the prior art equation. *Id.* Defendants argue that the patentee deleted reference to resolution in these claims and added the limitation that Plaintiff reframes as the disclaimed subject matter. *Id.* (citing Dkt. No. 304-6 at 3). Finally, Defendants contend that Plaintiff does not provide support for the proposition that infringement can be dependent upon the construction/resolution of some non-accused panel. *Id.*

Plaintiff did not provide any arguments related to these phrases in its Reply Brief.

2. Analysis

The phrase “wherein the pitch does not depend on the height and the width” appears in asserted claim 1 of the ’372 Patent. The phrase “wherein the fixed distance does not depend on the height and the width” appears in asserted claim 10 of the ’372 Patent. The Court finds that the phrases are indefinite, because they fail to “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 134 S. Ct. at 2129. Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112(b). The Supreme Court has described this statutory provision as requiring a “delicate balance” between the “inherent limitations of language” and the need of patents to “afford clear notice of what is claimed, thereby apprising the public of what is still open to them” so as to avoid “a zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims.” *Nautilus*, 134 S. Ct. at 2128–29. “[A]bsent a meaningful definiteness check . . . patent applicants face powerful incentives to inject ambiguity into their claims.” *Id.* at 2129.

The parties agree that the term “pitch” refers to “the distance between any two pixels in the panel.” Dkt. No. 313-1 at 3. The term “fixed distance” in claim 10 of the ’372 Patent similarly refers to the distance that the LEDs are spaced from each other. As Defendants note, the phrase “does not depend on the height and width” does not appear in the specification of ’372 Patent, other than in the claims. The patentee added this limitation during prosecution after the examiner issued a final rejection based on the Cox reference. The patentee made the following arguments regarding the amendments:

Prior Art Rejections***Claims 1–10***

Claims 1–10 have been rejected under 35 U.S.C. § 102 as being allegedly anticipated by U.S. Patent Publication No. 2014/0268565 (“Cox”). Applicant respectfully traverses these rejections.

Independent claim 1 has been amended to recite that “the LEDs are arranged relative to one another at a pitch,” that “the pitch is a predetermined constant number,” and that “the pitch does not depend on the height and the width. Cox does not disclose these limitations.

For example, Cox teaches that the pixel pitch depends on the height of the panel according to the following equation. See, e.g., Cox, ¶[0185].

$$\text{Pixel pitch} = \frac{\text{module height}}{\text{number of pixels in a column}}$$

Additionally, Cox is silent regarding any other pixel pitch or pixel pitch calculation. Thus, Cox does not disclose that the pitch does not depend on the height and the width. Therefore, Cox does not anticipate the limitations of claim 1 as amended. Accordingly, Applicant respectfully requests that the section 102 rejection of independent claim 1 be withdrawn.

Dkt. No. 304-6 at 10 (high-lighting added). As indicated by the patentee, the Cox reference disclosed that the pixel pitch was a function of the height of the module (*i.e.*, it was dependent on the height of the casing). The patentee attempted to argue around this fact by amending the claims to recite that the pitch does not depend on the height of the casing. In so doing, the patentee made the amended claim language meaningless, because the formula disclosed in Cox is how the pitch is determined. Indeed, it is the equation used for determining “the distance between any two pixels in the panel,” which the parties have agreed to is the meaning of pitch.

This is further illustrated by comparing the language of claim before and after the amendments. As illustrated below, prior to the amendments, claim 1 recited that “the LEDs are arranged relative to one another at a pitch, the pitch is determined as a function of the resolution and the height and width of the perimeter of the casing.”

1. (Currently Amended) A modular display panel comprising:
a casing having a recess and attachment points for use in attachment as part of a multi-panel modular display, a perimeter of the casing being substantially rectangular and having a height and a width, wherein the height is half of the width;
a printed circuit board disposed in the recess;
a display surface comprising an array of LEDs attached to a front side of the printed circuit board, wherein
the display surface comprises a resolution,
the LEDs are arranged relative to one another at a pitch,
the pitch is a predetermined constant number, determined as a function of the resolution and the height and width of the perimeter of the casing, and
the pitch does not depend on resolution is determined independent of the height and the width; and
a driver circuit electrically coupled to the printed circuit board.

Dkt. No. 304-6 at 3 (high-lighting added). With the amendment, the patentee deleted “resolution” from the claim language, which was previously recited as being “independent of the height and the width” of the perimeter of the casing. The deleted claim language is consistent with the specification’s disclosure of providing a “number of different resolution display panels [that] are manufactured and sold but each of these panels is made to have the same physical dimensions.” ’372 Patent at 2:66-3:2. However, contrary to the specification, and the understanding of a person of ordinary skill in the art, the amended claim language recited that the “pitch,” not the resolution, did not depend on the height and the width.

As the intrinsic evidence indicates, the “pitch” is a function of the module height. Indeed, Cox disclosed that changing the number of pixels in a column results in a different pitch based on the module height. Dkt. No. 304-6 at 10. It was because of this disclosure that the patentee specifically deleted reference to resolution in these claims and added the nonsensical pitch limitation, thereby making the claims indefinite. In summary, the claims are directed to a physical display panel, having physical dimensions, which necessarily define the pitch. Reciting that the

pitch does not depend on these physical dimensions renders the claim language meaningless. Likewise, reciting that the pitch is a “predetermined constant number,” or is a “fixed distance” does not provide any further clarity. Once embodied in a display panel, the pitch is always “predetermined” or a “fixed distance.” This is exactly what the Cox reference disclosed. Accordingly, Defendants have shown by clear and convincing evidence that the claim language is indefinite. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court’s Construction

The phrases **“wherein the pitch does not depend on the height and the width”** and **“wherein the fixed distance does not depend on the height and the width”** are indefinite for failing to inform, with reasonable certainty, those skilled in the art about the scope of the invention.

J. “wherein the plurality of integrated display panel sub-assemblies are configured to be moved to a second location remote from the first location”

Disputed Term	Plaintiff’s Proposal	Defendants’ Proposal
“wherein the plurality of integrated display panel sub-assemblies are configured to be moved to a second location remote from the first location”	not indefinite / plain and ordinary meaning	Indefinite (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)

1. The Parties’ Positions

The parties dispute whether the phrase “wherein the plurality of integrated display panel sub-assemblies are configured to be moved to a second location remote from the first location” is indefinite. Specifically, Defendants contend that there is no evidence of the necessary degree of distance required for the second location to be “remote from” the first location. Plaintiff argues that this limitation relates to teachings by the ’272 Patent that “the panels can be assembled at a

first location, shipped to second location and finalized at the second location.” Dkt. No. 297 at 30 (citing ’272 Patent at 20:1–7, 20:8–13, 3:66–67). According to Plaintiff, a person of ordinary skill in the art would understand the scope of this term. *Id.* (citing Dkt. No. 297-21 at ¶ 100).

Defendants respond that “remote from” requires the second location be separate from the first and some distance away. Dkt. No. 304 at 30. Defendants argue that there is no evidence of the necessary degree of distance required to be “remote from.” *Id.* Defendants contend that Plaintiff only discusses that the first and second locations differ, but does not address the degree of distance. *Id.*

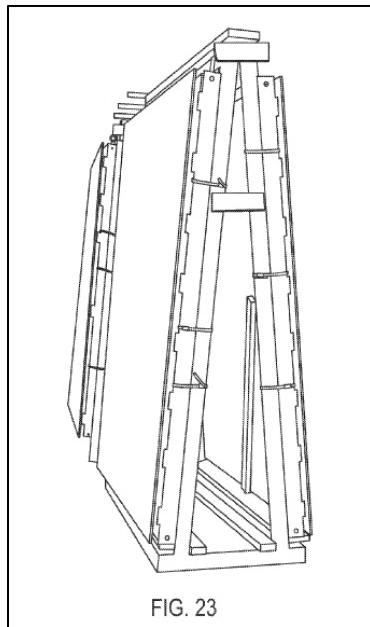
Plaintiff did not provide any arguments related to this phrase in its Reply Brief.

2. Analysis

The phrase “wherein the plurality of integrated display panel sub-assemblies are configured to be moved to a second location remote from the first location” appears in asserted claims 1 and 10 of the ’272 Patent. The Court finds that the phrase is not indefinite. The preambles of claims 1 and 10 of the ’272 Patent recite “[a] method of assembling a modular multi-panel display system.” The claims further recite detachably mounting display panels to a mechanical support “so as to assemble a plurality of integrated display panel sub-assemblies at a first location.” The claim then recites that the “the plurality of integrated display panel sub-assemblies are configured to be moved to a second location remote from the first location.” Importantly, the disputed claim language is a capability limitation and only requires the sub-assemblies to be “configured to be moved.”

To be sure, the limitation relates to the disclosure that the panels “can be constructed of aluminum or plastic so that it will be about 50% lighter than typical panels that are commercially available.” ’272 Patent at 4:22–25. This enables the panels to be “completely self-contained

building block[s].” *Id.* at 4:19–20. This means that the panels can “be assembled within a warehouse that is remote from the final location where the display will be utilized.” *Id.* at 20:1–7. “In other words, the panels can be assembled at a first location, shipped to second location and finalized at the second location.” *Id.* at 20:8–13, 3:66–67. Figure 23 illustrates “two assembled displays that are ready for shipment.” *Id.* at 20:8–9.



Defendants argue that there is no evidence of the necessary degree of distance required for the second location to be “remote from” the first location. As discussed above, the disputed claim language only requires that the “sub-assemblies are *configured to be moved* to a second location remote from the first location.” ’272 Patent at Claims 1 and 10 (emphasis added). Thus, a person of ordinary skill in the art would understand that the claim sub-assemblies “would need to be sufficiently lightweight to be moved from the first location where they are initially assembled to the second location where they are built together to form a completed display.” Dkt. No. 297-21 at ¶ 100. Accordingly, Defendants have failed to show by clear and convincing evidence that the claim language is indefinite. Finally, in reaching its conclusion, the Court has considered the

extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

The Court finds that the phrase “**wherein the plurality of integrated display panel sub-assemblies are configured to be moved to a second location remote from the first location**” is not indefinite, and is given its **plain and ordinary meaning**.

K. “substantially rectangular”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“substantially rectangular”	not indefinite / plain and ordinary meaning	Indefinite (Absen, Prismaflex, and Ledman Defendants)

1. The Parties’ Positions

The parties dispute whether the term “substantially rectangular” is indefinite. Plaintiff argues that the term refers to the shape of the “perimeter of the casing.” Dkt. No. 297 at 31. Plaintiff contends that no one would have any difficulty understanding the meaning of “rectangular,” and that the inclusion of the word “substantially” does not render it indefinite. *Id.* (citing Dkt. No. 297-21 at ¶¶ 116–21). According to Plaintiff, the inclusion of the word “substantially” provides “some allowance for ordinary manufacturing tolerances such that if as a result of such tolerances a corner is ever so slightly out of square,” as well as for if “the perimeter of the casing … become[s] slightly out of square in ordinary use due to uneven thermal expansion and/or contraction, or due to handling.” *Id.* (citing Dkt. No. 297-21 at ¶ 118). Plaintiff also contends that a person of ordinary skill in the art would know how to evaluate whether a casing was sufficiently square based on the specification of the ’372 Patent. *Id.* (citing ’372 Patent at 4:9–31, 5:1–21, 6:14–22, 12:26–47, Dkt. No. 297-2 at ¶ 119).

Defendants respond that the specification provides no guidance on bounding the term

“substantially rectangular.” Dkt. No. 304 at 31. According to Defendants, a skilled artisan would not understand the claim scope to any reasonable degree of certainty. *Id.* Defendants contend that Plaintiff’s arguments lacks specification support and provides no objective guidance on the boundaries of the claim. *Id.*

Plaintiff did not provide any arguments related to this term in its Reply Brief.

2. Analysis

The term “substantially rectangular” appears in asserted claims 1 and 10 of the ’372 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the term is not indefinite. It is well established that “claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.”

Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1370 (Fed. Cir. 2014); *see also, e.g., Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 65–66 (1923) (finding “substantial pitch” sufficiently definite because one skilled in the art “had no difficulty … in determining what was the substantial pitch needed” to practice the invention).

Defendants argue the specification provides no guidance on bounding the term “substantially rectangular.” Dkt. No. 304 at 31. Defendants propose the questions of whether the panel can have more than four sides, or rounded corners, or angled corners. *Id.* Here, a person of ordinary skill in the art would understand that the inclusion of the word “substantially” in this term is to provide “some allowance for ordinary manufacturing tolerances such that if as a result of such tolerances a corner is ever so slightly out of square,” or if “the perimeter of the casing … become[s] slightly out of square in ordinary use due to uneven thermal expansion and/or contraction, or due to handling.” Dkt. No. 297-21 at ¶ 118.

In particular the specification describes that each panel has a “building block like configuration,” which enables the use of “any number of panels to ... create integrated display systems of many sizes and shapes.” ’372 Patent at 4:9–31; *see also id.* at 5:1–21, 6:14–22, 12:26–47. Thus, so long as the perimeters of the casings are “substantially rectangular” such that the panels can be assembled in a building block like fashion to create displays of arbitrary sizes, this limitation is satisfied. *See, e.g.*, Dkt. No. 297-21 at ¶ 120. During the claim construction hearing, Plaintiff conceded that the scope of the term “substantially rectangular” would not include ovals, trapezoids, five-sided casings, six-sided casings, etc. Accordingly, Defendants have failed to show by clear and convincing evidence that the claim language is indefinite. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court’s Construction

For the reasons set forth above, the term “**substantially rectangular**” is given its **plain and ordinary meaning**.

V. CONSTRUCTION OF DISPUTED TERMS IN THE COX PATENTS

The ’791 and ’105 Patents (collectively, the “Cox Patents”) list David Cox, Arne Carlson, and Richard Romano as the inventors on one or both of the Cox Patents. Plaintiff contends that the Cox Patents disclose “a retrofit kit for in field use to convert a static billboard into a dynamic electronic sign for roadside or building signage use,” which “may also be utilized to replace existing electronic signage, whether such electronic signage is of a roadside structure or an indoor or outdoor building structure configuration.” Dkt. No. 297 at 101-11 (citing ’791 Patent at 1:38–41, 23:35–39). Plaintiff further contends that the electronic signs disclosed by the Cox Patents are designed so that they “can be easily and quickly installed on any structural surface ... without the need to replace or discard existing media mounting panels.” *Id.* (citing ’791 Patent at 1:54–56).

The Abstract of the '791 Patent states:

A modification kit for converting an existing signage mounting structure to an electronic sign generally includes a plurality of display modules; a plurality of sign sections each having a front-facing portion and a rear-facing portion, the front facing portion defining a two dimensional array of bays arranged in a plurality of rows along a vertical direction and a plurality of columns along a horizontal direction, each bay configured to receive one of the display modules, the rear-facing portion for mounting to a surface of the existing signage mounting structure; and a plurality of power routing systems, each power routing system having a power input for coupling to a power source and a plurality of power extensions, each power extension for coupling the power source to one of the plurality of display modules. The modification kit when installed provides the electronic sign.

Claim 12 of the '791 Patent is an illustrative claim and recites the following elements

(disputed terms in italics):

12. A *modification kit for converting an existing signage mounting structure to an electronic sign* comprising:
a plurality of display modules;
a plurality of sign sections each having a front portion and a rear portion, the front portion defining at least two vertical columns of bays that span and define a height of the sign, each bay configured to receive one of the display modules, the rear portion configured to be attached to a beam surface of the existing signage structure to allow most of a rear surface of the rear portion to be exposed for servicing; and
a plurality of power routing systems each including at least one node associated with each sign section with a plurality of individual power extensions each extending from one node to one of the bays.

A. “[a] modification kit for converting an existing signage mounting structure to an electronic sign”

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“[a] modification kit for converting an existing signage mounting structure to an electronic sign”	this preamble is not limiting plain and ordinary meaning	“a self-contained retrofit kit for on-site use to convert an existing static non-electronic sign structure into an electronic sign” (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)

1. The Parties' Positions

The parties dispute whether the preamble of claim 12 is limiting, and if it is, whether it requires construction. Plaintiff argues that the claims define a structurally complete invention. Dkt. No. 297 at 34. Plaintiff further argues that the preamble language does not provide antecedent basis for any part of any claim except for the “existing signage mounting structure.” *Id.* Plaintiff contends that Defendants add significant additional limitations to the plain language of the preamble. *Id.* at 35. Plaintiff argues that a modification kit need not be “self-contained,” or be required for “on-site use,” or limited to the conversion of “static non-electronic” signs into electronic signs. *Id.*

Defendants argue that the preamble is key to the claimed invention and provides antecedent basis for multiple terms in the claims. Dkt. No. 304 at 32 (citing ’791 Patent at 1:38–41). Defendants contend that Plaintiff improperly attempts to read the claims as if this is not a requirement of the claims. *Id.* Defendants argue that the preambles provide antecedence for “the existing signage mounting structure,” which Defendants contend is part of the claimed invention. *Id.* at 33.

Defendants also argue that the preamble’s “modification kit for converting an existing signage mounting structure to an electronic sign” describes fundamental characteristics of the invention, and defines the subject matter of the claim. *Id.* at 34. According to Defendants, the ’791 Patent is replete with references to “modification kits.” *Id.* (citing ’791 Patent at 1:45–67, 24:1–36, 77:55–79:27). Defendants argue that ignoring the preambles would divorce the claims from the purported invention. *Id.*

Defendants next argue that the specification defines the “modification kit” as “a self-contained retrofit kit for on-site use to convert an existing static non-electronic sign structure into an electronic sign.” *Id.* at 35–36 (citing ’791 Patent at 27:25–29, 1:38–41, 22:59–62, 20:8–11,

20:47–48, 20:62–68, 23:1–7, 23:58–61, 24:1–11, 24:38–43, 44:37–44, 77:56–62, 79:43, 23:25–30). Defendants further contend that it is impossible to convert the existing mounting structure to an electronic sign unless that structure was non-electronic in the first place. *Id.* at 36. According to Defendants, the specification consistently uses “converting” to describe modification kits that change a non-electronic billboard to an electronic one. *Id.* (citing ’791 Patent at 1:37–41, 18:48–19:17, 20:12–15, 20:65–67, 21:7–11, 23:1–13, 24:1–36, 25:61–65, 27:35–38, 37:32–36, 44:37–43, 57:33–39, 57:45–52, 70:45–54, 77:56–62, 79:4–8). Defendants argue that their construction is correct because it covers all embodiments of “converting” an existing sign structure to an electronic sign. *Id.*

Plaintiff replies that the preamble only provides antecedent basis to the “existing signage mounting structure,” which Plaintiff contends is not part of the claimed invention. Dkt. No. 307 at 10–11. Plaintiff argues that the determination of whether a preamble limits a claim is made on a case-by-case basis in light of the facts in each case. *Id.* at 11. According to Plaintiff, the claim drafter did not choose to use the preamble and the claim body to define the claimed invention. *Id.* Finally, Plaintiff argues that a claim that recites a “modification kit” should not be read to exclude modifying an existing electronic sign by replacing it with a new electronic sign when that situation is specifically contemplated by the specification. *Id.*

2. Analysis

The phrase “[a] modification kit for converting an existing signage mounting structure to an electronic sign” appears in asserted claim 12 of the ’791 Patent. The Court finds that the preamble is limiting, and that it should be given its plain and ordinary meaning. “Whether to treat a preamble as a limitation is a determination resolved only on review of the entire[] . . . patent to gain an understanding of what the inventors actually invented and intended to encompass by the

claim.” *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989). “No litmus test defines when a preamble limits claim scope.” *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). On one hand, a preamble is a claim limitation if it recites essential structure or steps, or if it is “necessary to give life, meaning, and vitality” to the claim. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999). On the other hand, a preamble is not limiting “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997). “Further, when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation.” *Catalina Mktg.*, 289 F.3d at 808.

As an initial matter, the preambles are indicated as limiting because the body of the claims depend on them for antecedence. *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”). Plaintiff concedes that the preambles provide antecedence for “*the* existing signage mounting structure,” which is recited in the body of each of the independent claims. Dkt. No. 297 at 34. In addition, dependent claims 11, 20, and 26 refer to the preamble by reciting “the electronic sign.” Likewise, claims 12 and 21 depend on the preambles for antecedence for the term “sign.” Therefore, the preamble appears to be limiting because it provides antecedent basis for at least two elements recited in the body of the claims. See *C.W. Zumbiel Co., Inc. v. Kappos*, 702 F.3d 1371, 1385 (Fed. Cir. 2012) (the preamble provided for an “enclosed carton for carrying a plurality of containers” and then referred to “the containers” in the claim body), *see also Pacing Techs., LLC v. Garmin Int'l, Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015) (preamble language “[a] repetitive

motion pacing system for pacing a user” limiting because it provided antecedent basis for “user” in the claim body).

Turning to the remaining intrinsic evidence, the Court finds that the preambles are limiting because they are “a necessary and defining aspect of the invention,” rather than “an introduction to the general field of the claim.” *See On Demand Mach. Corp. v. Ingram Indus., Inc.*, 442 F.3d 1331, 1343 (Fed. Cir. 2006). Plaintiff argues that the mounting structure is not part of “the claimed invention” in the ’791 Patent because it is just the structure onto which the claimed invention is mounted. Dkt. No. 297 at 34. The Court disagrees. Indeed, the preamble’s “modification kit for converting an existing signage mounting structure to an electronic sign” describes “fundamental characteristics” of the invention, *Poly America, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004), *see also On Demand*, 442 F.3d at 1343 (finding a preamble that set forth the “framework of the invention” a claim limitation).

The ’791 Patent includes a number of references to “modification kits.” For example, the “Background of the Invention” identifies issues with existing billboard modification kits, explains that it would be “highly desirable to have a new and improved billboard retrofit kit,” and provides desirable characteristics of the kit. ’791 Patent at 1:45–67. The specification then describes in great detail its kits, step-by-step instructions for installation, and the kit’s “unique and novel advantages.” *Id.* at 24:1–36. The specification concludes with the kit’s “important and unique” features and states “[t]herefore, provided herein is a new and improved in field retrofit kit for converting a static non electronic billboard into a dynamic electronic billboard and methods of retrofitting a static billboard in the field in a fast and convenient manner without the need of special equipment.” *Id.* at 77:55–79:27.

Thus, the entirety of the patent makes clear that modification kits are what is claimed.

Therefore, ignoring the preambles would divorce the claims from the purported “invention.” *See, e.g., Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989) (finding preamble a limitation because to do otherwise would divorce the claims from the specification). In fact, the patentees considered the “modification kit” preamble language such an important and fundamental part of the claimed invention that they included that language in the preambles of all 24 claims. *See Poly America*, 383 F.3d at 1310. Accordingly, the Court finds the preambles are limiting.

However, the Court does not adopt Defendants’ construction because it adds unwarranted limitations to the plain language of the preamble. The specification does discuss embodiments of a “self-contained, on-site” modification kit, but there is no reason to limit the claims to these embodiments. Moreover, the term “self-contained” could be confusing to the jury and is unnecessary. Similarly, the term “on-site use” is unnecessary because all display panels will be installed on-site. Finally, as discussed below with respect to the “mounting structure” terms, the specification specifically contemplates embodiments separate from the conversion of “static non-electronic” signs into electronic signs. ’791 Patent at 23:35–39, 58:2–6. Accordingly, the Court will give the preamble its plain and ordinary meaning.

3. Court’s Construction

For the reasons set forth above, the preamble of claim 12 of the ’791 Patent is limiting, and the phrase “[a] modification kit for converting an existing signage mounting structure to an electronic sign” is given its plain and ordinary meaning.

B. Mounting Structure Term

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“anchored mounting structure” / “existing signage [mounting] structure”	“anchored mounting structure” in preamble not limiting plain and ordinary meaning	“[mounting] structure for an existing non-electronic sign” (Absen, Prismaflex, Yaham, and Ledman Defendants)

1. The Parties' Positions

The parties dispute whether the term “anchored mounting structure” recited in the preamble of claim 15 of the ’105 Patent, and the term “existing signage [mounting] structure” recited in the preamble of claim 12 of the ’791 Patent are limiting. The parties also dispute whether these terms require construction. Plaintiff argues that Defendants attempt to limit the claimed “existing signage structure” to an existing nonelectric signage structure. Dkt. No. 297 at 35. Plaintiff contends that Defendants’ construction is contradicted by the specification. *Id.* (citing ’791 Patent, Abstract, 23:35–39, 58:2–6, 74:56–75:8). Plaintiff argues that the structures could be used to mount an electronic sign just as they could be used to mount a non-electric sign. *Id.* at 36.

Defendants respond that the term “anchored mounting structure” in the preamble claim 15 of the ’105 Patent is limiting. Dkt. No. 304 at 37. Defendants contend that “the mounting structure” is a clear reference back to the preamble’s requirement of an “anchored mounting structure.” *Id.* According to Defendants, the ’791 and ’105 Patents are clear that the referenced existing/anchored structures are pre-existing field structures that are ripe for conversion from an old form into a new form. *Id.* (’791 Patent at 1:45–56; ’105 Patent at 1:50–61). Defendants further argue that the specification emphasize that the conversion of the existing/anchored structure is from a static sign to a “new digital billboard.” *Id.* (citing ’105 Patent at 1:50–57, ’791 Patent at 23:6–13, 26:13–17).

Plaintiff did not provide any arguments related to this term in its Reply Brief.

2. Analysis

The term “anchored mounting structure” appears in asserted claim 15 of the ’105 Patent. The term “existing signage [mounting] structure” appears in asserted claim 12 of the ’791 Patent. The Court finds that the terms are limiting when they appear in the preamble, but finds that the terms do not require construction. The term “existing signage mounting structure” appears in the preamble of claim 12 of the ’791 Patent. For the reasons discussed above, the preamble of claim 12 is limiting, and all terms appearing in the preamble are thereby limiting. Indeed, “an existing signage mounting structure” provides antecedent basis for the “the existing signage mounting structure” recited in the body of the claim. Likewise, “an anchored mounting structure” provides antecedent basis for the “the mounting structure” recited in the body of the claim 15 of the ’105 Patent. Accordingly, the preamble is limiting because it provides antecedent basis for elements recited in the body of the claims.

However, the Court does not adopt Defendants’ construction because it improperly limits the terms to a “non-electric sign.” The ’791 Patent describes “[a] modification kit for converting an existing signage mounting structure to an electronic sign.” ’791 Patent at Abstract. However, the specification also describes converting an existing electronic sign using the disclosed invention. For example, the specification states that “it is contemplated that the billboard 110 of the present invention *may also be utilized to replace existing electronic signage*, whether such electronic signage is of a roadside structure or an indoor or outdoor building structure configuration.” *Id.* at 23:35–39 (emphasis added). Similarly, in describing Figures 35–37, the specification states that “in order to effect greater efficiency in field installation and retrofitting of existing static signs (or even older electronic signs with display module plug-in to foundational support capabilities), much of the electronic sign 8010 is factory pre-assembled” *Id.* at 58:2–

6.

Likewise, the specification also states the following regarding the term “existing sign structure”:

According to the present invention, “an existing sign structure” “an existing signage mounting structure” can include portions of or one or more of vertical beams, horizontal beams, diagonal beams, sheet metal panels, a sheet metal panelized system, a structural steel grid, a lattice structure of any appropriate ridged material, such as steel, structural foam, and plastic for example, a spaceframe, a billboard structure, architectural cladding, sign cabinet framing, a framed walling, a concrete walling, a planar surface. *These are but a few of the surfaces that may be included as part of an existing signage mounting structure.* Therefore, the present invention encompasses a wide range of structures and surfaces that form part of a pre-existing sign that can be retrofit with the retrofit kits of the present invention that include sign section assembly units, full or partial sign section assemblies, and compound structural frames whether pre-wired or wired on site. *Thus, there is no intention of limiting the scope of the type of surfaces and structures that can be modified to become a dynamic electronic sign or billboard.*

Id. at 74:56–75:8 (emphasis added). This indicates that the structures, which “are but a few … that may be included,” could be used to mount an electronic sign just as they could be used to mount a non-electric sign. Indeed, the specification states that “although the dynamic display of the present invention as described herein is installed on poster panels of an existing billboard, it is contemplated that a cabinet type electronic display system could also be modified by stripping the cabinet of its display modules and electrical system leaving an open faced cabinet frame.” *Id.* at 77:28–31. Accordingly, the Court rejects Defendants’ construction because it contradicts the intrinsic evidence.

3. Court’s Construction

For the reasons set forth above, the preambles of claim 15 of the ’105 Patent and claim 12 of the ’791 Patent are limiting, and the terms “**anchored mounting structure**” and “**existing signage [mounting] structure**” are given their **plain and ordinary meaning**.

C. weatherized display module(s)

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“display module”	plain and ordinary meaning	“a sealed display module having a pair of LED panels operatively coupled to a daughter board” (Absen, Prismaflex, Yaham, Ledman and Samsung Defendants)
“weatherized display module”	not indefinite plain and ordinary meaning	“a sealed display module protected against weather including extreme cold and heat and having a pair of LED panels operatively coupled to a daughter board” or indefinite (Absen, Prismaflex, Yaham, Ledman, Samsung Defendants)

1. The Parties' Positions

The parties dispute whether the terms “display module” and “weatherized display module” require construction. Plaintiff argues that the “display module” is not limited to the embodiment that “hav[e] a pair of LED panels operatively coupled to a daughter board.” Dkt. No. 297 at 37 (citing ’791 Patent at 79:28–29, Dkt. No. 2970-21 at ¶ 78). Plaintiff further argues that Defendants’ construction improperly requires the “display module” to be “sealed” and “protected against weather including extreme cold and heat.” *Id.* Plaintiff contends that it is the dependent claims that include the limitation that require “each individual one of said plurality of display modules is a weatherized display module.” *Id.* at 37-38. Plaintiff also argues that a person of ordinary skill in the art would understand from the patents that “weatherized” “refers to protection against weather conditions to which the display module is likely to be exposed.” *Id.* (citing Dkt. No. 297-21 at ¶¶ 78-80). Plaintiff contends that these weather conditions are not limited to “extreme cold and heat.” *Id.*

Plaintiff also argues that the patent itself teaches that it can refer to protection against wind

loads. *Id.* (citing '791 Patent at 29:18–24, 78:43–46). According to Plaintiff, limiting “weatherized display modules” to only modules that are protected against “extreme cold and heat” would be improper. *Id.* Plaintiff argues that a person of ordinary skill in the art would understand how to determine what weather conditions a particular display panel needs to be protected against. *Id.* (citing '791 Patent at 37:36–39, 32:2–5; Dkt. No. 297-21 at ¶ 79).

Plaintiff further argues that a person of ordinary skill in the art would understand that a display module does not need to be “sealed” in order to be “weatherized,” and would understand that other techniques could be used for protection against other weather conditions. *Id.* at 39 (citing '791 Patent at 43:20–23, 78:43–46; Dkt. No. 297-21 at ¶ 80). According to Plaintiff, a person of ordinary skill in the art would understand what a “weatherized display module” is and how to appropriately weatherize it. *Id.* (citing Dkt. No. 297-21 at ¶ 81).

Regarding the term “display module,” Defendants respond that the patents define the display modules to be “sealed.” Dkt. No. 304 at 38 (citing '791 Patent at 33:39–41, 79:49). Defendants argue that the patents further disclose that “[e]ach” display module of a modification kit “includes dual LED display panels” coupled to a “daughter board.” *Id.* (citing '791 Patent at 25:30–42, 34:41–45, 43:64–66, Figures 10, 13). According to Defendants, Plaintiff argued to the Patent Office that the Cox Patents disclose this configuration and “does not teach or suggest” a single-board configuration. *Id.* (citing Dkt. No. 304-2 at 13-14).

Regarding the term “weatherized display module,” Defendants contend that the term is indefinite, or alternatively should be construed according to definitions in the patents. *Id.* at 39. Defendants argue that the patents disclose that display modules can be “weatherized,” “fully weatherized,” or “completely weatherized.” *Id.* (citing '791 Patent at 9:42–43, 27:13–17, 79:18, 25:4–6, 25:13–18, 44:47–51, 4:31–32, 28:39–43, 33:40–44, 37:32–41, 41:67–42:3). Defendants

contend that Plaintiff's expert acknowledges that "weatherized" as used in the claims is a term of degree. *Id.* (citing Dkt. No. 297-21 at ¶¶ 79, 80; '791 Patent at 27:12–17, 78:43–46). Defendants further contend that the patents provide little guidance as to what the degree of weatherization must be to satisfy the claims. *Id.* at 40 (citing '791 Patent at 27:12–17, 29:18–24, 79:25–27, 54:43–44).

Defendants also argue that the intended environment is not a definite boundary for a claim construction, because panels might be infringing in one environment and not in others. *Id.* Defendants further contend that the Cox Patents fail to identify the necessary level of weatherization to protect against each identified type of weather. *Id.* (citing '791 Patent at 27:12–17). Defendants argue that the "building codes" referenced in the specification "do[] not resolve the ambiguity for the term ['weatherized display module'] in the context of the intrinsic evidence." *Id.* at 42 (citing '791 Patent at 30:26–30, 45:25–26).

In the alternative, Defendants contend that their construction covers "weather including extreme cold and heat" because "extreme cold and heat" is the only type of weather discussed in the context of weatherization. *Id.* at 41 (citing '791 Patent at 27:15–17). Defendants argue that the specification does not disclose the required level of waterproofing or solar-radiation protection, and further discloses inconsistent levels of wind protection. *Id.* at 41–42 (citing '791 Patent at 4:35–36, 29:8, 78:45–46). Defendants contend that "weatherized display module" should either be found indefinite, or construed to include "extreme cold and heat." *Id.* at 42.

Plaintiff did not provide any arguments related to this term in its Reply Brief.

2. Analysis

The terms "display module" and "weatherized display module" appears in asserted claim 19 of the '791 Patent, and asserted claim 15 of the '105 Patent. The Court finds that the terms are

used consistently in the claims and are intended to have the same general meaning in each claim. The Court further finds that the terms are not indefinite. Defendants argue that the specifications refer to “weatherized display modules” as a term of degree but provides little guidance as to how that degree may be determined. Dkt. No. 304 at 39. The Court disagrees. The specification indicates that the display modules are “weatherized” by being sealed, which is an “important feature of the present invention.” ’791 Patent at 41:65–42:3. Defendants correctly argue that the specification mentions “extreme cold and heat.” ’791 Patent at 27:12–17. However, “extreme cold and heat” appears only one time in the specification.

Moreover, the specification repeatedly states that “weatherized” can refer to protection against wind loads, and not just “extreme cold and heat.” *See, e.g.*, ’791 Patent at 29:18–24 (“The abutment of the weatherized display modules … is extremely resistant to wind load forces.”), 78:43–46 (“effectively weatherizing the frames against strong buffeting winds”). Limiting “weatherized display modules” to only modules that are protected against “extreme cold and heat,” while excluding modules that are protected against “strong buffeting winds,” would be improper. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1253 (Fed. Cir. 2013) (“A claim construction that excludes the preferred embodiment ‘is rarely, if ever, correct’”) (citations omitted).

Indeed, the specification states that “the individual structural frames 12 which are sealed by the individual weatherized display modules 14, further eliminates the need for air conditioning and or fans to cool the large number of display modules 14 distributed across a frame array 30 of the billboard 110.” ’791 Patent at 26:46–51. The specification further discloses that “[t]his passive cooling arrangement is an important and novel feature of the present invention.” *Id.* at 28:9–10. Accordingly, “weatherized” is the sealed aspect of the display module and not only “extreme cold and heat.” Indeed, the ’791 Patent and ’105 Patent include dependent claims that recite “wherein

each display module is a weatherized display module.” This indicates that the term “display module” should not be limited to weatherized or sealed.

Turning to the next aspect of the parties’ dispute, Plaintiff contends that the claims are not limited to the disclosed embodiment of a daughter board and pair of LED panels. Dkt. No. 297 at 37. Contrary to Plaintiff’s contention, the patentee indicated that the daughter board and pair of LED panels are “important and unique feature of the present invention.” ’791 Patent at 34:50–52. Specifically, the specification states the following:

As already earlier-noted each display module 14 also includes a centrally disposed daughter board 20 which handles the transfer of data between each of the display panel assemblies 14L and 14R respectively and also distributes power for use by the individual light emitting diodes. The electronic structure of the daughter board 20 will be described hereinafter in greater detail. For the moment, it will suffice to mention, that the daughter board 20 is adapted to be mounted to the backside of the LED frame 201 centrally disposed between the two PCA assemblies 14L and 14R. *This center mounting arrangement is an important and unique feature of the present invention.* In this regard, this arrangement, (1) enables a single power and data control board 20 to drive two separate display panel assemblies 14L and 14R respectively; and it also (2) enables the heat generated from driving the large bank of light emitting diodes associated with the display module 14 to be dissipated rearwardly into a large daughter board heat sink 24. As already mentioned, and as best seen in FIG. 7, the heat sink 24 is disposed within a cooling vent 91, when the display module 14 is latched within an associated structural bay member 16.

Id. at 34:41–63 (emphasis added). Likewise, every disclosed embodiment includes a pair of LED panels operatively coupled to a daughter board. ’791 Patent at 25:30–33, 27:1–7, 38:9–14, 43:62–67. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

3. Court’s Construction

For the reasons set forth above, the Court construes the term “**display module**” to mean “**module having a pair of LED display panels operatively coupled to a daughter board**.” The Court further construes the term “**weatherized display module**” to mean “**sealed module having**

a pair of LED display panels operatively coupled to a daughter board.”

D. “allow most of a rear surface of the rear portion to be exposed for servicing [individual ones of the plurality of display modules]”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“allow most of a rear surface of the rear portion to be exposed for servicing [individual ones of the plurality of display modules]”	plain and ordinary meaning	“most of a rear surface of the rear portion is exposed to allow a display module to be removed from the rear for servicing” (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)

1. The Parties’ Positions

The parties dispute whether the phrase “rear portion to be exposed for servicing” should be construed to mean “to be removed from the rear for servicing,” as Defendants contend. Plaintiff argues that Defendants’ construction replaces the words “exposed for servicing” with “exposed to allow a display module to be removed from the rear for servicing.” Dkt. No. 297 at 40. Plaintiff contends that the claim is not limited to embodiments in which the claimed servicing must include being able to remove the modules through the rear. *Id.* (citing ’791 Patent at 72:33–73:11). According to Plaintiff, the specification includes embodiments that do not enable removal of display modules through the rear, but are still rear-serviceable. *Id.*

Defendants respond that the patentee distinguished prior art as incapable for rear portion servicing because the prior art display modules are attached only from the front. Dkt. No. 304 at 42 (citing Dkt. No. 304-3 at 15). According to Defendants, this means that servicing must involve more than mere exposure. *Id.* Defendants further argue that the patent consistently links rear service to panel removal. *Id.* at 43 (’791 Patent at 15:59–65, 17:23–29, 71:28–60, 72:33–73:11).

Plaintiff replies that the claim only requires the rear portion to be exposed for servicing. Dkt. No. 307 at 12. Regarding the prosecution history of the ’778 Patent, Plaintiff contends that

Defendants ignore that claim 18 specifically required “wherein for at least some of the array of bays each bay defines a passageway opening to the rear surface to enable a display module [sic] removably supported within the bay to be removed and replaced through the passageway opening.” *Id.* (citing Dkt. No. 304-3 at 14-15). Plaintiff argues that the claim in the ’778 Patent required both rear servicing and that the display module can be removed and replaced through the rear. *Id.* Plaintiff contends that there must be some difference between rear servicing and rear removal. *Id.*

2. Analysis

The phrase “allow most of a rear surface of the rear portion to be exposed for servicing [individual ones of the plurality of display modules]” appears in asserted claim 12 of the ’791 Patent. The Court finds that the phrase should be given its plain and ordinary meaning. Defendants’ construction improperly redrafts the words “rear portion to be exposed for servicing” with “rear portion is exposed to allow a display module to be removed from the rear for servicing.” Defendants correctly argue that the specification provides a description of a “method of removing a display module 14 from the rear side of the sign 9110 with reference to FIGS. 47A–D.” ’791 Patent at 72:33–73:11.

However, the claims are not limited to this disclosed embodiment. Indeed, the specification describes embodiments that are “*completely* serviceable from the rear-facing side of the signage.” *Id.* at 73:57–58. This indicates that embodiments that do not enable removal of display modules through the rear are still rear-serviceable, just not “*completely*.” For example, “the rear portion to be exposed for servicing” enables cable connections to be made or changed, without the need for the entire panel to be removed. Accordingly, the Court rejects Defendants’ construction because it improperly redrafts “exposed for servicing” to mean “removed from the rear for servicing.”

Defendants contend that the patentee distinguished prior art as incapable for rear portion servicing, because the prior art display modules are attached only from the front. Dkt. No. 304 at 42. The Court disagrees that this requires redrafting “exposed for servicing” as “removed … for servicing.” The claim language only requires the rear portion to be exposed for servicing. Moreover, claim 18 in the ’778 Patent specifically recites “wherein for at least some of the array of bays each bay defines a passageway opening to the rear surface to enable a display module [sic] removably supported within the bay to be removed and replaced through the passageway opening.” Dkt. No. 304-3 at 6. The patentee’s argument over the prior art relates to this element, as the prior art shows that most of the rear surface is exposed for servicing. The claim in the ’778 Patent required both rear servicing and also removing the display module through the rear. *Id.* This is not the language recited in claim 12 of the ’791 Patent. Accordingly, the Court rejects Defendants’ construction.

3. Court’s Construction

For the reasons set forth above, the phrase “**allow most of a rear surface of the rear portion to be exposed for servicing [individual ones of the plurality of display modules]**” is given its **plain and ordinary meaning**.

E. “a plurality of power routing systems each including at least one node associated with each sign section [assembly] with a plurality of individual power extensions each extending from one node to one of the bays”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“a plurality of power routing systems each including at least one node associated with each sign section [assembly] with a plurality of individual power extensions each extending from one node to one of the bays”	plain and ordinary meaning	“a plurality of power-routing systems, (i) each power-routing system including at least one node associated with each sign section [assembly], (ii) each sign section [assembly] including a plurality of individual power cables, and (iii) each power cable extending from one node to one of the bays” (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)

1. The Parties’ Positions

The parties dispute whether the phrase “a plurality of power routing systems each including at least one node associated with each sign section [assembly] with a plurality of individual power extensions each extending from one node to one of the bays” requires construction. Plaintiff argues that Defendants do not seek to construe any of the words used within this term, but instead seek to re-organize this term according to their own preferences. Dkt. No. 297 at 41. Plaintiff contends that Defendants’ construction improperly requires that “each sign section [assembly] includ[e] a plurality of individual power extensions.” *Id.* Plaintiff argues that it makes no sense to require that each sign section [assembly] have a plurality of individual power cables. *Id.* According to Plaintiff, it would be contradictory to require that each sign section have more than one power cable if they may be associated within only a single node. *Id.*

Defendants respond that their construction helps the jury by simplifying the phrase’s convoluted grammar. Dkt. No. 304 at 43. Defendants argue that it also clarifies the object of the

modifier “with a plurality of individual power extensions each extending from one node to one of the bays.” *Id.* Defendants further argue that the “plurality of power extensions” modifies each sign section assembly has (“with”) a plurality of individual power extensions. *Id.* at 44. Defendants also contend that the claims do not allow each sign section to be associated with “only a single node.” *Id.* According to Defendants, the claim requires that “each” power routing system include “at least” one node associated with each sign section. *Id.*

Plaintiff did not provide any arguments related to this term in its Reply Brief.

2. Analysis

The phrase “a plurality of power routing systems each including at least one node associated with each sign section [assembly] with a plurality of individual power extensions each extending from one node to one of the bays” appears in asserted claims 12 and 21 of the ’791 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the phrase should be given its plain and ordinary meaning. Defendants’ construction improperly redrafts the claims and requires that “each sign section [assembly] includ[e] a plurality of individual power extensions.” This limitation is not found in the claim. Rather, the claim term requires that the plurality of power routing systems include the claimed plurality of individual power extensions.

Moreover, the intrinsic evidence does not require each sign section [assembly] to have a plurality of individual power cables. The claims include sign sections that are associated with a single node (“at least one node associated with a sign section”). As the power cables “extend[] from one node to one of the bays,” it would be contradictory to require that each sign section have more than one power cable if they may be associated with only a single node. Accordingly, the Court rejects Defendants’ construction.

3. Court's Construction

For the reasons set forth above, the phrase “**a plurality of power routing systems each including at least one node associated with each sign section [assembly] with a plurality of individual power extensions each extending from one node to one of the bays**” is given its plain and ordinary meaning.

F. Node Terms

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“power introduction node”	not governed by § 112(f) plain and ordinary meaning	112(f) function: introducing power Structure: a snap-type node on the back of the structural bay that fixes power harness thereon, or a press-type node on the back of the structural bay that fixes power harness thereon (Absen, Prismaflex, Yaham, and Ledman Defendants)
“structural bay locator node”	not governed by § 112(f) plain and ordinary meaning	112(f) function: locating the structural bay Structure: a snap-type node on the back of the structural bay, or a press-type node on the back of the structural bay (Absen, Prismaflex, Yaham, and Ledman Defendants)

1. The Parties' Positions

The parties dispute whether the terms “power introduction node” and “structural bay locator node” are subject to § 112(f). Dkt. No. 297 at 42. Plaintiff argues that the language of the ’105 Patent makes it clear that the term “node” recites a definitive structure. *Id.* (citing ’105 Patent at 65:44–45, 32:18–21, 33:12–34:21, 51:63–52:51). Plaintiff contends that the ’105 Patent does not limit the type of node used to “a snap-type” or “press-type” node as Defendants’ proposed §

112(f) construction would do. *Id.* at 43. Plaintiff argues that the “power introduction node” is a node structure where power is introduced from the preformed wiring harness to the structural bay members within which it routes power. *Id.* Plaintiff further argues that the “structural bay locator node” is a node structure that physically locates (or aligns) the preformed wiring harness with the structural bay within which it routes power. *Id.*

Defendants respond that “node” is a nonce term that “do[es] not connote sufficiently definite structure.” Dkt. No. 304 at 45 (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1350 (Fed. Cir. 2015)). Defendants argue that these “node” terms cover only the structures disclosed in the specification (and equivalents). *Id.* (citing ’105 Patent at 33:39–65). Defendants also contend that “power junction ends” itself lacks any definitive structure, and that “power junction ends” cannot mean the ends of a cable (a “power extension end”). *Id.* (citing ’105 Patent at 65:35–43). Defendants argue that the specification does not depict “power junction end 1602” or otherwise describes its structure. *Id.* According to Defendants, “power junction ends” do not provide the structure necessary to preclude “node” from being a nonce word. *Id.*

Plaintiff did not provide any arguments related to this term in its Reply Brief.

2. Analysis

The term “power introduction node” and the term “structural bay locator node” appear in asserted claim 15 of the ’105 Patent. It is well settled that [a] claim limitation that actually uses the word ‘means’ invokes a rebuttable presumption that § 112, ¶ 6 applies.” *Apex Inc. v. Raritan Comput., Inc.*, 325 F.3d 1364, 1371 (Fed. Cir. 2003) (quotation omitted). It is also equally understood that “a claim term that does not use ‘means’ will trigger the rebuttable presumption that § 112, ¶ 6 does not apply.” *Id.* at 1371 (quotation omitted). The presumption against the application of § 112, ¶ 6 may be overcome if a party can “demonstrate[] that the claim term fails

to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Williamson*, 792 F.3d 1339 (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). “In undertaking this analysis, we ask if the claim language, read in light of the specification, recites sufficiently definite structure to avoid § 112, ¶ 6.” *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014) (citing *Inventio AG v. Thyssenkrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1357 (Fed. Cir. 2011)).

Here, there is a rebuttable presumption that § 112(f) does not apply because the claim does not recite the word “means.” The intrinsic evidence further demonstrates that a person of ordinary skill in the art would understand the necessary structure of the “power introduction node” and “structural bay locator node.” The disputed terms appear in claim 15 of the ’105 Patent, and refer to nodes that are provided to the “preformed wiring harness for routing low voltage power within said plurality of structural bay members.” Claim 15 further recites that the power introduction node facilitates “providing separate power branches for distributing power between adjacent columns of the structural bay members,” and that the “structural bay locator node” facilitates “providing a low voltage power branch to at least an individual one of said plurality of structural bay members.” Thus, the claim itself provides the structural interactions between the recited elements.

Consistent with the claim language, the specification teaches that “nodes” are “power junction end[]” structures that are used for connecting wiring. ’105 Patent at 65:44–45. For example, the specification depicts “a plurality of preformed nodes or over-mold node features 2401–2411” that “are configured to be snapped or pressed into position in wire harness node receptacle features” in connection with the embodiment shown in Figure 24C. *Id.* at 32:18–21. The specification further provides a detailed description of the “over-mold node locators and node

receptacles,” and how they are used to “help expedite locating the routing and installation paths for the data power wiring.” *Id.* at 33:12–34:21. The specification also discloses how these nodes and node receptacles are used during “an install power/data wiring harness step” to “connect[] in a specific sequence a set of power/data wiring harnesses.” *Id.* at 51:63–52:51. Accordingly, the terms “power introduction node” and “structural bay locator node” recite specific structures and therefore are not subject to § 112(f).

In particular, the “power introduction node” is a node structure where power is introduced from the preformed wiring harness to the structural bay members within which it routes power. *See id.* at Claim 15 (“said at least one preformed wiring harness is provided with at least one power introduction node to facilitate providing separate power branches for distributing power between adjacent columns of the structural bay members”). Similarly, the “structural bay locator node” is a node structure that physically locates (or aligns) the preformed wiring harness with the structural bay within which it routes power. *See id.* (“said at least one preformed wiring harness is provided with ... at least one structural bay locator node to facilitate providing a low voltage power branch to at least an individual one of said plurality of structural bay members”).

Defendants have not identified any evidence that a person of ordinary skill in the art would not consider the identified “nodes” to recite sufficiently definite structure. Indeed, the term “node” is used in connection with the “plurality of power routing systems” term discussed above, (“each including at least one node associated with each sign section”), but Defendants do not contend that it lacks sufficient structure there. Accordingly, the terms “power introduction node” and “structural bay locator node” conveys structure to a person of ordinary skill in the art.

Defendants argue that the term “node” is a nonce word that “do[es] not connote sufficiently definite structure.” Dkt. No. 304 at 44 (citing *Williamson v. Citrix Online, LLC*, 792 F.3d 1339,

1350 (Fed. Cir. 2015)). The Court disagrees. The term does not recite the word “means,” and Defendants have not cited any authority that determined “node” to be a nonce word or a verbal construct. Instead, *Williamson* only generically discusses nonce words in claim construction, but offers little guidance on the term “node.” *See Williamson*, 792 F.3d at 1350. (“Generic terms such as ‘mechanism,’ ‘element,’ ‘device,’ and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word ‘means’ because they ‘typically do not connote sufficiently definite structure.’”). In sum, the claims and specification show that Defendants have failed to overcome the presumption that the claimed terms “power introduction node” and “structural bay locator node” are not means-plus-function limitations. Moreover, at no point during any of its discussion of using “nodes” for connecting wiring does the ’105 Patent limit the type of node used to “a snap-type” or “press-type” node as Defendants’ proposed § 112(f) construction would do.

3. Court’s Construction

For the reasons set forth above, the terms “**power introduction node**” and “**structural bay locator node**” are not subject to 35 U.S.C. § 112(f), and are given their **plain and ordinary meaning**.

G. Structural Frame Terms

Disputed Term	Plaintiff’s Proposal	Defendants’ Proposal
“structural frame”	plain and ordinary meaning	“a structural frame composed of a structural foam material with a hard honeycomb type foamed inner core” (Absen, Prismaflex, and Ledman, Defendants)

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
“compound structural frame”	plain and ordinary meaning	“a structural frame having a plurality of bay members and composed of a structural foam material with a hard honeycomb type foamed inner core” (Absen, Prismaflex, Yaham, Ledman, and Samsung Defendants)

1. The Parties' Positions

The parties dispute whether the terms “structural frame” and “compound structural frame” require construction. Plaintiff argues that the patentee did not act as a lexicographer to re-define the disputed terms in the context of the patents or disavow the full scope of the terms. Dkt. No. 297 at 44. Plaintiff further argues that the patentee broadly claimed a “structural frame” in related patents. *Id.* (citing ’458 Patent at Claim 1, 5; ’157 Patent at Claims 2, 6, 16, 18; ’666 Patent at Claims 1, 9). Plaintiff contends that these claim indicate that patentee did not understand or intend “structural frame” to only refer to frames composed of structural foam. *Id.* at 45. Plaintiff further contends that the patentee never asserted during prosecution that a prior art reference failed to disclose all of the claimed limitations, because it had a structural frame that was not composed of structural foam. *Id.*

Defendants respond that their construction are based on the express lexicography given to these terms in the Cox Patents and the arguments by Plaintiff to the Patent Office. Dkt. No. 304 at 45. Defendants argue that the specification defines “compound structural frame” as “a plurality of bay members” *Id.* at 46 (citing ’791 Patent at 28:38–46, 35:1–4). Defendants further contend that Plaintiff argued that the structural foam material is essential to the (compound) structural frame. *Id.* (citing Dkt. No. 304-2 at 14). Defendants also contend that in the abandoned parent application of the ’791 Patent, the applicant affirmed that the specification defines “compound structural

frame.” *Id.* (citing Dkt. No. 304-4 at 8-9).

Defendants next argue that patent teaches that “it should be understood that structural foam . . . mak[es] extremely strong, rigid and light-weight plastic parts and products that have a hard outer ‘skin or shell’ and a hard honeycomb type foamed inner core.” *Id.* at 46-47 (citing ’791 Patent at 31:4–11). Defendants also argue that Plaintiff cites to Internet material to downplay the importance of structural foam to the invention as “merely a type of material.” *Id.* at 47. Defendants also contend that Plaintiff argues claim differentiation using claims from other patents. *Id.* According to Defendants, the patentee’s lexicography requires adopting their construction. *Id.*

Plaintiff replies that the specification does not define these terms. Dkt. No. 307 at 13. Plaintiff argues that Defendants rely on Plaintiff’s statements at the USPTO in prosecuting other applications in which this patent is cited as prior art. *Id.* Plaintiff contends that its statements regarding the disclosure of the specification of the Cox Patents have no bearing on the proper interpretation of the claims of the Cox Patents. *Id.* Finally, Plaintiff argues that Defendants ignore the multiple times the Cox Patents specifically claim that the compound structural frame “is composed of structural foam.” *Id.* (citing ’458 Patent at Claim 1, 5; ’157 Patent at Claims 2, 6, 16, 18; ’666 Patent at Claims 1, 9).

2. Analysis

The term “structural frame” appears in asserted claim 15 of the ’105 Patent. The term “compound structural frame” appears in asserted claims 14 and 15 of the ’791 Patent. The Court finds that the term “structural frame” is used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the patentee limited the term “compound” to “a plurality of bay members.” The specification states that “[y]et another unique and novel feature of the compound structural frame 12 is its *compound structure*. That is, a single

structural frame 12 contains plural structural bay members, such as the structural bay member 16.” ’791 Patent at 28:38–46 (emphasis added). Similarly, the specification states “[t]he structural frame 12 *is a compound structure* since it contains ten substantially identical structures in the form of structural bay members.” ’791 Patent at 35:1–4 (emphasis added). Thus, a person of ordinary skill in the art would understand that “compound” means “having a plurality of bay members.”

The Court further finds that the patentee limited the “structural frame” to a “frame composed of a structural foam material or material having equivalent strength and weight properties of structural foam.” Specifically, the specification teaches the “several unique and important advantages” of a structural foam material given its light weight and strength:

Considering now the compound structural frame 12 in greater detail, each compound structural frame 12 as earlier-mentioned is composed of a structural foam material, which is a type of cellular plastic with a dense outer skin surrounding a foam core. Structural foam was selected because of its light weigh, strength and its ability to be easily molded to provide the many unique and novel features designed into each structural frame 12. In this case, it should be understood that structural foam molding is a process for making extremely strong, rigid and light-weight plastic parts and products that have a hard outer “skin or shell” and a hard honeycomb type foamed inner core.

’791 Patent at 30:64–31:11. The specification further teaches that “those skilled in the art should clearly understand that the structural frame 12 is designed with the following *unique and novel features* as part of the retrofit kit 10: (1) each frame 12 is composed of light weigh durable structural foam which is sufficiently light in weight (no greater than 50 pounds) that the frame can be easily lifted and installed by a single worker without the need of a crane or any other heavy lifting equipment.” *Id.* at 32:7–13 (emphasis added). Likewise, the specification states that “a key factor in the design criteria of the present invention” is the use of structural foam. *Id.* at 78:33–36.

The prosecution history is consistent with the specification. In the abandoned parent application of the ’791 Patent, the patentee affirmed that the specification defines “compound

structural frame.” Dkt. No. 304-4 at 8-9 (“*As discussed in the application*, the compound structural frame member *is* composed of structural foam”) (emphasis added). Accordingly, the Court construes the term “structural frame” to mean “frame composed of a structural foam material or material having equivalent strength and weight properties of structural foam.”

Plaintiff presents a claim differentiation argument by referring to claims from other patents. Dkt. No. 297 at 44-45. Claim differentiation only creates a presumption that is “overcome by a contrary construction dictated by the written description or prosecution history.” *Retractable Techs.*, 653 F.3d at 1305. Here, the weight of the remaining intrinsic evidence overcomes the claim differentiation presumption. In a footnote, Plaintiff contends that it is not making a claim differentiation argument, but instead is pointing to evidence of how “the patentee understood and used the terms at-issue.” Dkt. No. 297 at 45 n.17. Contrary to this characterization, Plaintiff is making a claim differentiation argument by comparing the claim language of a dependent claim to the claim language of an independent claims for the purpose of illustrating how this difference informs the meaning of the disputed term. This is the doctrine of claim differentiation.

Plaintiff also argues that “[a] ‘structural foam’ material is actually merely a type of material manufactured according to a specific injection molding process,” and that “[t]he resulting material can be a thermoplastic with properties similar to thermoplastics manufactured according to other techniques, such as traditional injection molding.” *Id.* at 44 n. 15. The Court does not necessarily disagree with Plaintiff, assuming that the material has equivalent strength and weight properties of structural foam material, and is not merely any injection molded material. This is because the specification is critical of “injection molding” in the sense that it is cost prohibitive or impractical, and therefore is properly excluded from the scope of the claims when it fails to provide equivalent strength and weight properties of structural foam material. *See, e.g.*, ’791 Patent at 31:12–13

(“[I]njection molding would be very impractical and cost prohibitive.”), *id.* at 78:39–42 (“[I]njection molding would make molding costs prohibitive and would make the overall weight of the individual panels too excessive for a worker to lift and place in position without using special equipment during installation.”). Indeed, the specification explicitly states “[t]he structural foam molding process is an extension of a standard injection molding process but is a greatly improved process for the present invention providing several unique and important advantages.” *Id.* at 31:8–11.

During the claim construction hearing, Plaintiff cited to *Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788, 796 (Fed. Cir. 2019). The panel in *Continental* determined that the patentee did not “make clear” that the asserted claims were limited to a specific process. *Id.* at 799. Specifically, the claims at issue were product claims, and the fundamental dispute was whether a process limitation should be read into the product claims. *Id.* at 794 (Fed. Cir. 2019) (“The district court construed the Category 1 Terms to require that the “surface,” “removal,” or “etching” of the dielectric material be “*produced by a repeated desmear process.*”) (emphasis in original). Here, the Court’s construction does not limit the product claims to a specific process. Instead, the construction requires the frame to be composed of a structural foam material or material having equivalent strength and weight properties of structural frame material.

The Court readily acknowledges, and is often challenged with determining, the fine line between construing the claims in light of the specification and improperly importing a limitation from the specification into the claims. *See Phillips*, 415 F.3d at 1323. It is always the Court’s goal to capture the scope of the actual invention, rather than strictly limit the scope of claims to disclosed embodiments or allow the claim language to become divorced from what the specification conveys is the invention. *Id.* at 1323-24. While the claims in this case leave open the possibility that the

recited “structural frame” may include any material as Plaintiff’s “plain and ordinary meaning” proposal would suggest, the intrinsic evidence indicates otherwise.

The specification expressly states that “a key factor in the design criteria of the present invention” is the use of structural foam because of its light weight, strength, and its ability to be easily molded. ’791 at 78:33–48, *see also id.* at 32:7–13, 31:4–8. The specification expressly distinguishes the invention from the prior art based on these material properties. Thus, a construction of “structural frame” that limits the term to “a structural foam material or material having equivalent strength and weight properties of structural foam” is required to tether the claims to what the intrinsic evidence indicates the inventor actually invented. Indeed, Plaintiff only offers conclusory statements regarding what the intrinsic evidence actually discloses. That said, the Court does not adopt Defendants’ construction of “with a hard honeycomb type foamed inner core” because it would improperly limit the claims to a disclosed embodiment of the structural foam.

3. Court’s Construction

For the reasons set forth above, the Court construes the term “**structural frame**” to mean “**frame composed of a structural foam material or material having equivalent strength and weight properties of structural foam.**” The Court further construes the term “**compound structural frame**” to mean “**structural frame having a plurality of bay members and composed of a structural foam material or material having equivalent strength and weight properties of structural foam.**”

H. “structural bay member[s]”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“structural bay member[s]”	plain and ordinary meaning	“a defined structure to receive one display module” (Absen, Prismaflex, Yaham, and Ledman Defendants)

1. The Parties' Positions

The parties dispute whether the term “structural bay member[s]” requires construction.

Plaintiff argues that the phrase “defined structure” appears nowhere in the specification of ’105 Patent. Dkt. No. 297 at 46. Plaintiff further argues that the requirement that a structural bay member receive only a single display module does not appear anywhere in the patent. *Id.* Plaintiff contends that the claim could encompass a circumstance where each structural bay member removably supports two (or more) display modules. *Id.*

Defendants respond that their construction confirms that each structural bay member is configured for the receipt and display of a single display module. Dkt. No. 304 at 48 (citing Dkt. No. 304-9 at 26; ’105 Patent at 30:63–32:31). Defendants argue that the specification notes that the structural bay members have built-in alignment features, self-cooling features, wire routing features, and node receptacle features that facilitate a quick and easy installation process for the fully weatherized LED display modules. *Id.* Defendants further argue that the applicants further argued to the Patent Office that a prior art reference failed to teach “structural bay members,” because the reference lacked bay members that are configured to “receive and support display modules.” *Id.* (citing Dkt. No. 304-9 at 26). According to Defendants, the specification defines that a structural bay member is integrally formed in a compound structural frame to receive a multi-display display module. *Id.* at 48-49.

Plaintiff did not provide any arguments related to this term in its Reply Brief.

2. Analysis

The term “structural bay member[s]” appears in asserted claim 15 of the ’105 Patent. The Court finds that the term “structural bay member[s]” does not require construction when considered in the context of the claim language. Claim 15 of the ’105 Patent recites that the “structural frame” includes “a plurality of structural bay members.” The claim further describes the “structural bay

members” as “configured in adjacent columns for receiving and removably supporting therein a corresponding plurality of weatherized display modules.” The claim language does not require the “structural bay member” to be “a defined structure,” or limit the “structural bay member” to receiving “one display module.” Furthermore, the phrase “defined structure” does not appear in the specification. Moreover, there is no requirement that a structural bay member receive only a single display module. Instead, the specification indicates that in one embodiment the “structural bay member” may receive one display module. ’105 Patent at 30:63–32:31. However, the claims are not limited to this embodiment, but instead only require “a plurality of structural bay members” that “removably support” a “corresponding plurality of weatherized display modules.”

Finally, Defendants’ argument that the patentee further limited the term “structural bay members” during prosecution of the parent patent is unpersuasive. Dkt. No. 304 at 48. The patentee only argued that the prior art reference failed to teach “structural bay members” because the reference lacked bay members that are configured to “receive and support display modules.” Dkt. No. 304-9 at 26. In contrast to the prior art, the patentee argued that the plain language of the claim recites “at least one structural frame defining a plurality of structural bay members configured in adjacent columns for receiving and removably supporting therein a corresponding plurality of weatherized display modules.” Accordingly, the Court rejects Defendants’ construction.

3. Court’s Construction

For the reasons set forth above, the term “**structural bay member[s]**” is given its **plain and ordinary meaning**.

VI. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered to not refer to each other’s claim construction positions in

the presence of the jury. Likewise, in the presence of the jury, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court. The Court's reasoning in this order binds the testimony of any witnesses, and any reference to the claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 30th day of September, 2020.



ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE